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HYPERTENSION, OBESITY, VIRILISM AND PSEUDOHERMAPHRODITISM

AS CAUSED BY SUPRARENAL TUMORS

HOWARD L. CECIL, M.D.

BALTIMORE

Cortical suprarenal tumors are of unusual interest because of the changes in metabolism, the changes in distribution of hair, the hypertension, and the changes in the secondary sexual characteristics caused by them. In recent articles such changes have been ascribed to basophilic adenoma of the pituitary. If such observations are correct, and it seems they are, one is forced to the conclusion that similar or identical changes are caused by tumors of either of these glands. It must be borne in mind that the suprarenal is a compound gland and that the medulla plays no part in changes of the sexual organs. But tumors of the medulla do cause hypertension and brief consideration will be given to tumors of this type.

The symptoms of suprarenal cortical tumors are variable, depending on the sex, the time of onset, and the rapidity of the growth. Two syndromes have been described: (1) the obese type, occurring in female children and adults; (2) the herculean type, occurring in male children and adolescents. These two types are fairly characteristic of suprarenal cortical tumors. There are, however, many exceptions and two other types, which are seldom encountered. One is the emaciation type and the other is the Archard-Thiers type. In the first there is almost complete loss of subcutaneous fat without hypertrichosis and sex changes. In the Archard-Thiers type there is amenorrhea with obesity, hypertrichosis and diabetes. This type is not thought to be due entirely to dysfunction of the suprarenal but to pluriglandular disease in which the pituitary also plays an important part.

Before puberty, in the male, there is a striking growth of the body. The muscular development is more pronounced than the size of the individual would indicate. Ossification and dentition take place early. In one case the cranial sutures were closed at birth and in another dentition was complete at 6 years, except for the last molars. Hypertrichosis appears early on the pubis, face and body. The skin is usually rough and often there is acne similar to that seen at puberty. The external genitalia attain adult size. Premature puberty has been claimed, but most of the cases quoted were not proved suprarenal disease. If the tumor is benign or slow-growing malignant, the individuals become prematurely senile and die young.

The two following cases are striking examples of malignant cortical tumors:

Linser's case: A boy, aged 5 years 7 months, looked from 16 to 18. With the exception of the last molars, all the teeth had erupted. He exceeded most of the measurements of a normal boy of 16. The pubis was covered with hair. The penis when pendent was from 8 to 9 cm. long; when erect, from 12 to 14 cm. The testicles were as large as pigeon's eggs. After death a malignant tumor of the left suprarenal was found.

Adam's case: A boy, aged 14 years 9 months, complained of a lump in the abdomen. In view of his age, the boy presented a remarkable appearance of precocious development. As a child, nothing unusual was noted. Puberty set in at 10 years, from which time, although he increased little in height, he developed great muscular strength, excelled in athletic sports, and defeated all competitors. For two years his complexion had become plethoric and dusky, and during this period the growth of hair on his face had to be shaved daily. His appearance was that of a sturdy little man. At operation an inoperable tumor was found. At autopsy it was found to be a hypernephroma of the left suprarenal.

After puberty, no further change toward the male type is possible. It has been stated in most articles that the sex changes are always toward the adult male type. This is not true, as the following two cases, cited by Wèber, illustrate:

Case of Dr. J. P. zum Busch: A man, aged 27, a cook, for the last two months had noticed slight enlargement of both mammae and could squeeze a few drops of milky fluid from the well developed nipple of each breast. He died and autopsy showed a hypernephroma of the left suprarenal cortex with multiple metastases to the lungs, ribs, mesenteric glands, and glands in the neck. Sections from one of the enlarged mammae showed glandular tissue resembling that of an ordinary active mamma in the female.

Case of Bittorf-Mathias: A man, aged 26, who had suffered from dyspnea for eight months, for one year had had progressive enlargement of the mammae and a few months later the testes commenced to atrophy. Six months after onset he became impotent and in eight months a tumor of the left part of the abdomen was observed. Metastatic tumors developed in the liver, and signs of obstruction of the inferior vena cava were present. Autopsy disclosed a hypernephroma of the suprarenal cortex. Both mammae showed glandular tissue. The testes, small, showed evidence of spermatogenesis, but the interstitial cells were hardly developed.

Before puberty in the female, highly malignant tumors cause death before marked changes occur; but in cases of hyperplasia, some adenomas and slow-growing malignant tumors, the changes toward the adult male type are very marked. The children, as a rule, become fat; seldom is there unusual muscular development. Hair appears early on the pubis and occasionally on the face. The skin becomes red, coarse and dry. Acne has been described frequently. The voice becomes

coarse and ugly. Laryngoscopic examination has proved that the vocal cords are enlarged. Ossification of the epiphysis and almost complete dentition have been observed. Some of the patients were mentally dull, but most were alert.

The changes in the external genitalia are most unusual. The clitoris assumes the size of a penis. The labia majora enlarge and are covered with hair. The internal genital organs have been described as smaller than normal. Menstruation does not begin when the age of puberty is reached. There are two striking exceptions: one girl menstruated at ten, and another at two and a half years.

After puberty, as before, the amount of change depends on the duration of the disease. Usually the first symptom is cessation of menstruation. This, without apparent cause, stops and does not begin again unless the person is cured by operation. About the same time there is loss of sexual desire and of the normal feminine modesty. As the disease advances, the individual may be attracted by ones of the same sex. Holmes said, "She had been, before menses ceased, fond of boys, but after this she lost all interest in the opposite sex and showed preference for society of women." After operation, "she was now again fond of men." It has been noted in other cases that women had been attracted by their own sex, when before the onset of the disease they had not been.

Abnormal growth of hair, or hirsutism, appears shortly after cessation of menstruation. The transverse pubescence begins to be transformed into the male type and at the same time hair begins to grow on the face. Later the legs, arms, abdomen, chest and back become covered with hair and that of the head becomes coarse and dry. The distribution of hair has been described as that occurring in the male, but it is more generally distributed and many times more profuse than that occurring on most males. After removal of the suprarenal tumor the hair on the trunk, arms and legs falls out and the feminine distribution is reestablished. In one case the hair of the head also fell out, but it grew back long and of the normal feminine variety. The loss of hair has occurred chiefly at the menstrual period.

The texture of the skin changes. It becomes red or brown and dry. Acne similar to that seen in boys at puberty has been noted frequently. Pigmentation, which differs from that of Addison's disease, has been described. Striae atrophicae appear on the abdomen, hips and thighs. In several cases large ulcers were present on the legs, and in others furunculosis on the back and limbs.

The voice becomes masculine and remains so even for a considerable time after successful removal of the tumor.

The changes in the secondary sexual organs are most striking. As in children, the clitoris greatly enlarges and may assume the size of an adult penis. The labia also enlarge, but not proportionately as much as the clitoris. After cure by operation these organs return to the normal size. The menses, as noted, cease and at the usual time for them to appear there are usually some of the symptoms accompanying the menopause. The uterus and ovaries have been described as small or atrophic, but after the removal of the tumor normal function has been resumed in a few months. It is hardly possible that atrophy had occurred, but only a cessation of function. There is always a diminution in the size of the breasts, but these regain their normal size after cure by operation. After the menopause there is no change of any kind.

So marked may be the change in secondary sexual characteristics that the true sex may be mistaken. This is particularly true when the disease started in infancy. Crecchio described a peculiar instance in a pseudohemaphrodite:

> The individual was baptized as a girl but brought up as a boy. As a man he contracted gonorrhea twice and died at the age of 40. The breasts and nipples were small, the chest was hairy. The penis was 6 cm. long; the scrotum, absent. At autopsy, the uterus, tubes, ligamenta lata and ovaries were found, and with the exception of the last (which were small) they were normal. No corpora lutea were seen. The suprarenals were the seat of extreme hypertrophy.

Such changes taking place after birth have led to the belief that congenital pseudohemaphroditism in the female is due to abnormal hypersecretion of the cortex during embryonic life. All degrees of such anomalies are found, from only slight enlargement of the clitoris to enormous enlargement of the clitoris accompanied by atresia or total absence of the vagina. The internal genital organs are usually small and sometimes greatly deformed. Such deformities do not increase nor is there a change toward the normal. It would seem that if such defects were the result of hypersecretion of the suprarenal cortex it was rather early in embryonic life and that the suprarenal had ceased to exercise such abnormal control. With the exception of cortical tumors I have seen no report of abnormalities of the suprarenals that might have been responsible for the condition. Removal of one suprarenal has failed to have any beneficial effect.

Obesity is one of the most striking symptoms. The distribution of fat is on the abdomen, chest, buttocks and hips. There is little, if any, increase on the legs and arms, causing them to appear unusually small. The face is full and unsightly, owing to deposits of fat in the cheeks, under the chin and in the neck.

In contrast to the obese type, occasionally one has extreme emaciation with loss of practically all the fat. It would seem that this is due to destruction of suprarenal tissue, as the other symptoms are not so pronounced or are absent altogether.

Of particular interest is hypertension. This has been observed in many of the patients. It is not usually of the paroxysmal type but the blood pressure is constantly high. It, however, varies in wide ranges, rising 20 mm. or more of mercury as a result of exercise, or falling as much under complete rest. The hands and feet are cold and clammy. There may be cyanosis and edema of the extremities and abdominal wall. The pulse rate, as the blood pressure, varies greatly, rising very rapidly during exercise and becoming rather slow under rest. Dyspnea is marked and in some cases cardiac hypertrophy and dilatation have been observed.

Pheochromocytomas also produce hypertension, but frequently of the paroxysmal type. The attacks are characterized by weakness, palpitation, shortness of breath and syncope, nausea, occasional vomiting, cold clammy extremities, choking and headache. Edema of the lungs with expectoration of frothy, blood-tinged sputum has occurred. The blood pressure has been observed as rising from normal to over 300. Death during the attacks has occurred; six deaths have followed simple operations, and chromaffin tumors of the suprarenals were found at autopsy. The attacks last a very short time and the normal state is quickly

regained. Autopsies on the fatal cases showed changes identical to those caused by acute epinephrine poisoning. Many of the cases do not present paroxysmal attacks but a constant hypertension. Cardiac hypertrophy and dilatation have occurred. Nine of the last twenty cases recorded were of this type. Hypertension has been observed in a girl, aged 2 years, who had a chromaffin tumor, and the vascular changes were the same as those found in epinephrine sclerosis. It therefore is very important to consider the differential diagnosis between these types of hypertension and other forms. Cortical tumors have been reported, particularly in men, in which the only symptom was hypertension.

DIAGNOSIS

The syndromes caused by suprarenal cortical tumors and hyperplasias are characteristic. Both suprarenals are involved in hyperplasias and may be with tumor. Baldwin reported an instance of bilateral malignant cortical tumor. In 30 per cent of the cases only one suprarenal was present, or the one opposite the tumor was insufficient to support life. Hypernephromas are often large enough to be palpated and nearly always displace the kidney downward so that it can be palpated easily. Such is of course never so in hyperplasia and seldom the case in adenomas. Sugar tolerance tests have been of some help in the diagnosis, but a sufficient number has not been done for a proper correlation of the different types of suprarenal tumors.

A careful urologic examination is essential. Glycosuria has been present in many cases of suprarenal tumors. Hematuria associated with suprarenal tumors is rather serious, as it signifies invasion either of the kidney or of the renal vein. A decreased kidney function on the side involved will also signify such invasions. Roentgenograms and pyelograms may show displacement of the kidney downward and a mass above it. The kidney may be rotated or compressed in the vertical diameter. These studies are necessary for the differential diagnosis between kidney tumors and suprarenal tumors that have not produced characteristic changes. Insufflation has been used but is of doubtful benefit.

REPORT OF AUTHOR'S CASE

A woman, aged 31, married, complained of pain in the left side and weakness. Her health had always been good except for frequent severe headaches until two months before admission, since which time she had had none. She had had two children and there had been no miscarriages.

The present illness began seventeen months before admission, following an automobile accident in which she sustained an injury to the region of the left kidney. She had not felt well since—"just had no pep." About eight months before admission she completely lost her sexual desire. Four months before admission her physical examination was reported as negative. Several weeks later, sugar and albumin were present in the urine. About this time she began to have pain in the left side, which had steadily grown worse. The blood pressure was 120 systolic when she was first examined. A short time before this menstruation stopped, and a little later edema of the ankles and legs appeared. The edema always increased more rapidly at the time menstruation should have occurred. She had gained 20 pounds (9 Kg.) in four months, largely or entirely the result of edema. Dyspnea was first noticed four months before admission; it had steadily grown worse and was most distressing when the patient took the slightest exercise.

Hair started to grow on the upper lip and cheeks two months before admission. No other change in the distribution of hair was noticed. There had been no increase in fat. Appetite was almost lost and she had nausea and occasionally vomited.

The patient was well nourished but not obese. There was no pigmentation of the skin, but it was red and thickened. The feet, legs and thighs showed marked edema; the hands, forearms and arms, edema to a less degree.

The heart was not enlarged; the rate was normal. The blood pressure after slight exercise was 190 systolic, 80 diastolic. On rest it dropped to 170. (The tension had increased from 120 to 170 in four months.) The clitoris was not enlarged. The pelvic organs were normal. A large mass was present in the region of the left kidney and displaced the kidney downward.

The urine showed a trace of albumin, a few red blood cells, a few pus cells, and a few coarsely granular casts. The phenolsulphonphthalein excretion was 55 per cent the first hour, 15 per cent the second.

Ureteral catheterization showed no blood or pus from the right kidney. Phenolsulphonphthalein appeared in two minutes, and 35 per cent was excreted in thirty minutes. On the left side there was degenerated blood. Phenolsulphonphthalein appeared in a faint trace in five minutes, and 5 per cent was excreted in thirty minutes. A left pyelo-ureterogram showed the kidney displaced downward. The pelvis was of normal size. The calices appeared close together; this was thought to have been due to rotation of the kidney but was later proved to have been due to compression of the kidney in the vertical diameter. They were not elongated or blunted. A large mass lay above the kidney.

The loss of sexual desire, cessation of menstruation, increase in hair on the face, marked weakness, shortness of breath, the recent rapid rise in blood pressure from normal to 170, and a tumor in the upper left side led to the diagnosis of a tumor of the left suprarenal.

At operation a large tumor was found which nearly surrounded the upper pole of the kidney. The kidney pedicle was clamped and ligated. After this the tumor was easily removed. Examination revealed a mass in the region of the renal vein, extending down to the vena cava. On palpation a portion slipped away. This portion of the tumor could not be removed and the wound was closed. The patient left the operating room in good condition, but after six hours she failed rapidly. The pulse became very rapid and weak and she coughed up blood-tinged sputum. Twelve hours after operation she had a large pulmonary hemorrhage and suddenly died.

On pathologic examination the surface of the kidney appeared normal. On section it was found that the tumor had invaded the venous system, even into the small vessels, and from these the soft tissue around the pelvis. Areas of necrosis were present.

The tumor measured 17 by 12 by 7 cm. and weighed 720 Gm. Its capsule had been ruptured in several places and soft tumor protruded through them. The tumor was soft, spongy and a dirty, yellowish brown. Many areas of old hemorrhage were present. Whitish bands of tissue extended from the capsule and formed lobules of varying sizes.

Sections of the tumor showed uniformity of pattern. The cells were grouped around newly formed blood vessels. Mitotic figures and giant cells were numerous. The cells for the most part were uniform in size with rounded, granular nuclei and clear cytoplasm. The tumor bore some resemblance to the zona fasciculata.

The pathologic diagnosis was adenocarcinoma of the left suprarenal.

The postmortem examination revealed the liver enlarged and congested. The right suprarenal was much smaller than normal; the left was not found. The ovaries and tubes appeared normal. The uterus was fibrosed and the endometrium atrophic. The tumor had invaded the renal vein and vena cava and was attached to the wall in many places.

Blood was present in both pleural cavities. The lungs were heavy and crepitant throughout, but solid areas were present in both. Many small arteries were plugged with tumor emboli. Infarction had not occurred. A lymph node with a secondary deposit of tumor was found in the hilus of the right lung.

Microscopic examination showed lipoid degeneration of the cortical cells of the right suprarenal. The endometrium seemed inactive and the glands small. Follicles in the ovaries were

rare and the general picture was that of an ovary after the menopause.

In this case the tumor was so malignant that marked changes did not take place before death.

OPERATION

When cortical tumors are to be removed it is necessary that the opposite suprarenal be explored and found to be normal. In 30 per cent of the reported cases the suprarenal opposite the one occupied by the tumor was absent or inadequate to support life. For this reason most surgeons prefer the transperitoneal route. Whether one uses the transperitoneal route or the lumbar route, it is necessary to make two incisions. The suprarenal vessels, particularly the veins, should be tied before any manipulation of the tumor is carried out. This will prevent metastases caused by detached tumor and at the same time prevent the large amount of suprarenal secretion from being suddenly squeezed into the circulation. Most of the fatalities occurred within a few hours after operation, from "shock." It is highly probable that this is a toxic effect resulting from the squeezing of large amounts of secretion into the blood stream, or a collapse following, such as is known to be the case following large injections of epinephrine. In cases of hyperplasia, either suprarenal can be removed. Owing to the close proximity of the right suprarenal to the vena cava, the left can be extirpated more easily.

RESULTS

All of the patients that had cortical hyperplasia and adenoma, excepting when congenital, recovered from the operation and also were cured of the disease with loss of abnormal distribution of hair and fat and recession of the clitoris to normal. In hypernephroma, 22 per cent completely recovered. Five and one-half per cent died later of metastases. In 11 per cent the tumor was found to be inoperable. Of the remaining patients, 39 per cent died soon after operation, of shock. Of the patients who recovered, 66 per cent had severe shock. It would seem that the results could be greatly improved by early operation and by employing methods to reduce the postoperative mortality.

COMMENT

Pheochromocytomas unquestionably cause paroxysmal hypertension by producing large amounts of epinephrine and suddenly releasing it into the blood stream. They sometimes produce a constant hypertension. Neither atrophy nor absence of the opposite suprarenal has been found associated with these tumors. Hypertension is also caused by cortical tumors with a return to the normal after removal of the tumor.

In pseudohemaphroditism of the congenital type, removal of one suprarenal, even when it was enlarged, has had no beneficial effect on the anomaly. Much can be done by plastic surgery and the individuals restored to something approaching normal. The sex should be determined and the anomaly corrected in accordance. The opposite has been done with poor results.

In pseudohemaphroditism of the acquired variety, removal of the tumor or of one suprarenal, in cases of hyperplasia, has been followed by very gratifying results with the return to the normal state or nearly so.

There are great variations in the type change and the degree. In boys the change is toward the adult. In girls and women the change is toward the adult male type. After puberty in males and after the menopause there is no change noted. The two cases cited are unusual exceptions. This would lead one to believe that the sex changes were brought about by an indirect action of the suprarenal through the ovaries.

A review of the cases shows rather conclusively that the suprarenal opposite the tumor atrophies and is not congenitally absent. All degrees of atrophy from a slight beginning to total absence have been observed. This important point has not previously been noted. It is of the greatest importance, for removal of one suprarenal cannot ever be done with safety without determining the condition of the other.

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PREVENTION OF CHILLS FOLLOWING TRANSFUSION OF CITRATED BLOOD

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Eighteen years ago, one of us (R. L.) suggested a simplified method of blood transfusion; namely, the citrate method. It can be stated without exaggeration that this method represents the simplest and easiest procedure. In fact, the great popularity that blood transfusion enjoys today is based on the introduction of the citrate method into the medical armamentarium.

With the popularization of this method, blood transfusion has been put within reach of every physician and surgeon. Blood transfusion up to that time had been confined to a small number of well equipped hospitals. The use of citrated blood has been rendered possible in small communities and its life-saving value made applicable to a large number of patients.

When this method was introduced, many objections were brought forward against its clinical efficacy. It was claimed that the vitality of the erythrocytes and leukocytes was impaired by the mixture of the blood with sodium citrate. Furthermore, many clinicians felt that the introduction of an anticoagulant was contraindicated in hemorrhagic diseases and other forms of blood dyscrasia. It was proved long ago [1] that these objections are purely theoretical. Citrated blood has the same clinical value as unmodified blood, not only in cases of shock and hemorrhage but in every form of blood disease. These points have been discussed in detail in previous papers. We are not concerned at present with these questions and shall not stop to discuss them. However, another clinical manifestation deserves important consideration; namely, the question of chills following the transfusion of citrated blood.

Unquestionably, a chill following a transfusion may be a serious complication. In many instances transfusions are given to patients who are very ill. In such a case, one should employ the method that produces the least number of chills. On this basis a careful clinician may prefer noncitrated blood.

There is abundant proof in the extensive literature on blood transfusion that the injection of unmixed blood is rarely followed by chills. On the other hand, we can refer to conclusive investigations by different authors that chills follow transfusions of noncitrated blood and

1. Lewisohn, Richard: Chills Following Transfusion of Blood, J. A. M. A. **80**: 247 (Jan. 27) 1923.

of citrated blood in the same proportion of cases. For the first contention Brines [2] may be quoted as representative of many other authors, whereas the second contention has been upheld by Meleney and his associates,[3] Lewisohn [4] and others. These authors have compared large series of cases in which noncitrated blood was used with a similar series of transfusions by the citrate method and have shown that there is no difference in the number of chills if equal care as to details of technic is applied.

Thus it is evident that chills may follow and will follow any of the modern methods of blood transfusion. As stated, the question of their prevention is of the greatest importance and decidedly worthy of consideration.

We had always felt that the chills following citrate transfusion were not due to the addition of a minute quantity of sodium citrate to the blood. If sodium citrate were the cause of these chills, it would be logical to assume that every transfusion given by the citrate method should be followed by a chill. Furthermore, the percentage of chills should have been more frequent in the early days of citrate transfusion, before the technic was established in detail, with a gradual diminution in subsequent years. However, the course of events was just the reverse. The first seventeen citrate transfusions given in this hospital in 1915 were free from chills and post-transfusion reactions. Undoubtedly, the complete absence of untoward symptoms in this group of early citrate transfusions was of the greatest consequence. For, if we had encountered many chills in the infancy of this new method, the procedure might have been abandoned as too hazardous for the patient.

The absence of chills in this early set of cases, compared with the increase in subsequent years, could be explained only by the fact that these early transfusions were given by one person, who paid careful attention to the preparation of the instruments and solutions.

However, the personal supervision lasted over a brief period only. In the days of transfusion by vessel anastomosis, transfusion was resorted to in rare instances. Even the Lindemann method and the Kimpton-Brown tubes required specially trained workers. The utmost simplicity of the citrate method caused a rapid increase in the number of transfusions. After a short time, citrate transfusions were given in our institution by different members of the house staff.

Along with this lack of concentration, the number of chills increased at the Mount Sinai Hospital. Among the first 129 citrate transfusions, the percentage of chills was 15. Among 200 transfusions the percentage rose to 20, and among 365 transfusions to 24. The large number of chills led to investigations to reduce such reactions. By concentrating the performance of transfusions in the hands of eight senior members of the house staff, the number of chills fell from 23 per cent in 1922 to 13 per cent in 1923. However, in recent years the average percentage of transfusion chills has again risen to about 20 per cent.

The use of intravenous medication in the form of dextrose infusions or blood transfusions as a preoperative and postoperative procedure has increased considerably during the last ten years. It was noted that with the popularization of these procedures the percentage of the number of chills increased. One of us (N. R.) felt that the preparation of the instruments (cannulas, glassware and the like) used for intravenous therapy was too lax and required standardization.

The solution of this important problem depends on the important fact that chills and reactions following intravenous therapy are due to the presence of foreign protein. This protein is either extraneous matter present in the distilled water or the remains of changed blood proteins from a previous intravenous injection. Unless the instruments are cleansed with the greatest care immediately after a transfusion, minute blood clots and other foreign matter remain in the apparatus. They may cause a chill in the next case.

The main step, therefore, is the cleansing of instruments and the preparation of solutions so that they are rendered absolutely free of foreign protein. This can be done effectively only when the cleansing of the apparatus and the preparation of the solutions used for intravenous therapy are centralized. Only apparatus and solutions properly prepared by competent technicians in the central preparation room should be used for intravenous purposes.

With the opening of the new semiprivate pavilion, space for such a department was provided. It was put in charge of a head nurse. This division works absolutely independent of the main operating rooms. Formerly these sets had been cleansed and sterilized in the various wards, often by student nurses. This new department started to function, Oct. 1, 1931. We are indebted to Miss Koch, head nurse of this department, for the efficiency with which this department has functioned since its inauguration.

For the removal and elimination of foreign protein from the distilled water, or old blood from the apparatus, the following procedures are carried out:

1. *Distilled Water, Sodium Citrate and Sodium Chloride.*—Triple distilled water, obtained from a special Barnstead still, is used for the preparation of sodium citrate (30 per cent) and sodium chloride (0.85 per cent).

Sodium citrate (30 per cent) may also be bought on the open market in 5 cc. ampules. One should inquire from the manufacturer for sodium citrate prepared with triple distilled water. For actual use, 1 cc. of this concentrated sodium citrate solution is used for every hundred cubic centimeters of blood.

2. *Special Cleansing of Apparatus.*—After each transfusion, all parts are separated and washed in cold water for the removal of blood. They are then washed in a dilute solution of green soap to which compound solution of cresol has been added to make up about a 1 per cent solution. They are then thoroughly rinsed in tap water.

All parts are then placed in a large pan containing sodium hydroxide (0.1 per cent solution) and boiled for five minutes. They are then transferred to a large pan containing distilled water, to remove the sodium hydroxide. The glassware and rubber tubing are again washed with triple distilled water and are ready to be assembled and sterilized, either in metal boxes or in special bundles, in the autoclave.

The glassware and rubber tubing are boiled separately. The needles are always sharpened before being treated but boiled for only three minutes in sodium hydroxide solution (0.1 per cent).

3. *Preparation of Apparatus for the Autoclave.*—A. For the donor: A bundle containing the apparatus for taking the blood from the donor (two pyrex cylinders 500 and 10 cc., respectively, one glass rod, two tourniquets, two needles gage 13 and 15, Luer adapter and rubber tubing, one ampule of 30 per cent sodium citrate).

B. For the recipient: A metal box, as shown in the accompanying illustration, devised by Dr. Turner, director of the hospital, containing glassware, rubber tubing and cannulas for the transfusion into the recipient.

2. Brines, O. A.: The Transfusing of Unmodified Blood, Arch. Surg. **12:** 124 (Jan., part 1) 1926.
3. Meleney, H. E.; Stearns, W. W.; Fortuine, S. T., and Ferry, R. M.: Post-Transfusion Reactions, Am. J. M. Sc. **154:** 733 (Nov.) 1917.
4. Lewisohn, Richard: Citrate Method of Blood Transfusion After Ten Years, Boston M. & S. J. **190:** 733 (May 1) 1924.

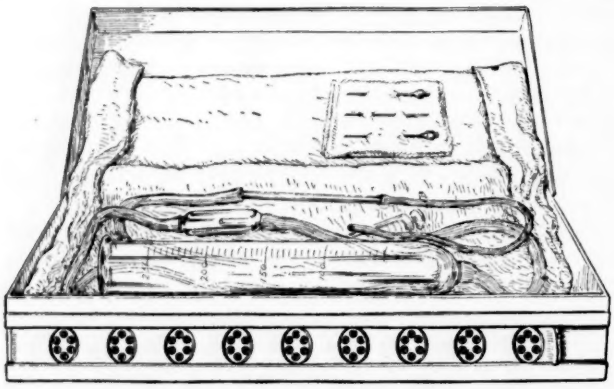
The great benefit derived from the strict enforcement of these rules is evident from the following statistical data:

In 1930, among 412 transfusions given in the wards of the Mount Sinai Hospital, there were thirty-nine chills (9 per cent). Of these transfusions, 243 were given by the citrate method with twenty-nine chills (12 per cent), and 169 were given by the Unger or Rosenthal method with ten chills (6 per cent).

From Oct. 1, 1931, to Oct. 1, 1932, five chills occurred among 477 transfusions (1 per cent). Three hundred and thirty-one citrate transfusions were followed by four chills (1.2 per cent), and 146 Unger or Rosenthal transfusions were followed by one chill (0.7 per cent).

In this last series of citrate transfusions, the oldest patient was 86 years old and the youngest patient 12 days old.

It may be of interest to give some details about the five cases of post-transfusion chills. Two patients suffered from hemolytic icterus. In one of these, seven citrate transfusions were given with one chill; in the other, four Unger transfusions were administered to the patient with one chill. The third patient was suffering



Metal box containing one gravity flask (250 cc.), one short piece of rubber tubing with glass drip and clamp, a long piece of rubber tubing with stopcock and long glass connection, a short piece of tubing with adapter, and two needles of 18 and 19 gage.

from bleeding ulcer. He received two citrate transfusions, the first transfusion being followed by a chill lasting ten minutes and a temperature of 102.6; the second transfusion was not followed by a reaction. In the fourth case, a boy, aged 2 years, suffering from typhoid, the first citrate transfusion was uneventful; the second citrate transfusion was followed by a slight chill lasting five minutes. In the fifth case (carcinoma of the suprarenal gland) an Unger transfusion was given, July 20, without any reaction, whereas a citrate transfusion two days later was followed by a chill.

The fact that in cases 1 to 4 inclusive, only one out of seven, four, two and two transfusions, respectively, caused a reaction, is sufficient proof that an error in technic was the cause of the chill.

While we have put down the chills in cases 1 and 2 on the debit side of transfusion, it is possible that these chills were due to a hemolytic crisis, a frequent occurrence in hemolytic icterus.

These comparative statistics bring out some interesting points:

Chills following blood transfusion are not the necessary sequel of blood transfusion; they are avoidable. They are due to impurities in the instruments or solutions used in blood tranfusion.

It has often been stated that chills will occur in very sick patients. This statement is incorrect. Many of the patients in the last series were desperately sick. Yet the absence of chills is striking.

Both the citrate method and the Unger apparatus were developed in this institution in 1915. Both methods have been used during the last eighteen years, the citrate method being employed about twice as often as the Unger method. It is of interest to note that during August and September, 1932, the citrate method was used almost exclusively; sixty-two citrate transfusions and two Unger transfusions were given during this period. It seems that the marked reduction in the number of reactions following citrate transfusions to about 1 per cent led most services in our hospital to give preference to the citrate method.

These statistics represent the combined material of the medical, surgical, gynecologic, neurologic, otologic and pediatric services. About twenty different members of the house and resident staff were instrumental in giving these transfusions. In spite of the large number of doctors who had an active part in these transfusions, the number of chills could be held at a very low level. We feel that if a team of two or three men would perform all the transfusions given in this hospital, post-transfusion chills might be eliminated completely.

The important factor that the new organization plays in the reduction of chills is clearly evidenced by the following data: In the three months preceding the establishment of the new department, the incidence of post-transfusion chills following citrate transfusions was over 10 per cent, while in the subsequent six months no chill occurred among 154 citrate transfusions.

The same marked reduction of chills was observed not only in blood transfusions but after intravenous infusions as well.

We would not like to be misunderstood. While the proper preparation and sterilization of the instruments are of the utmost importance, other factors play a rôle in a successful transfusion. For instance, the rapid flow of the blood from the donor into the glass receptacle will prevent the formation of small blood clots, which might cause chills. A slow rate infusion into the recipient is another important factor. The importance of the slow drip has been pointed out recently by Hirshfeld and Hyman.[5] The citrate transfusion is the only method of blood transfusion that allows a slow rate for the infusion into the vein of the recipient.

It is unnecessary to dwell on the supreme importance of accurate blood tests as a safeguard against chills and other untoward symptoms.

The simple rules given here should eliminate post-transfusion chills. The rather frequent occurrence of chills following citrate transfusions had, in previous years, alienated many clinicians from this simple method. They can now turn back with safety to the citrate method, which is unsurpassed in simplicity and general applicability.

CONCLUSIONS

1. Post-transfusion chills are avoidable.

2. Chills are not due to the mixture of the blood with sodium citrate.

3. Elimination of the foreign protein element, detailed instructions for which have been given, will reduce the number of chills to a minimum.

5. Hirshfeld, Samuel; Hyman, H. T., and Wanger, Justine J.: Influence of Velocity on the Response to Intravenous Injections, Arch. Int. Med. **47**: 259 (Feb.) 1931.

4. The use of solutions (sodium citrate and physiologic solution of sodium chloride) prepared with triple distilled water is indispensable.

5. The incidence of chills following citrate transfusion has been reduced from 12 to 1 per cent.

6. If instruments and solutions are prepared properly, citrate transfusion can be used with safety in every case requiring a blood transfusion.

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FUNCTIONAL DISTURBANCES OF PSYCHOGENIC NATURE

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Long experience has shown that it is by no means a popular task to give an address on psychoanalysis to a group of physicians. The reception of Professor Freud's first lecture in the Viennese Medical Society prescribed the attitude of the medical authorities for forty years. The causes of the resistance of medical circles against the concepts of psychoanalysis have been so often discussed that I do not wish to dwell on them again. On the other hand, I should like to win benevolent neutrality by calling attention to the chief historical and psychologic causes of the rejection of this branch of science in medical circles. After forty years' experience, the reasons for this rejection can be defined with considerable precision.

If psychoanalysis had remained the modest therapeutic device by which Freud and the small group of his followers tried to influence hysterical symptoms forty years ago, the whole embittered fight about psychoanalysis would never have arisen. In the course of time, however, from these modest beginnings a systematic concept of the human personality has developed, a concept which claims not only that it is able to explain certain symptoms but that it opens a new and unusual approach to the investigation and understanding of biologic processes. Like all fundamental scientific discoveries, psychoanalysis, after a period of general rejection, has influenced not only the closer field of psychopathology but the whole of contemporary thought. Strangely enough, in medical circles the resistance against this new approach to the problem of life has lasted longer than anywhere else, perhaps because it has a more intellectual background than the emotional rejection of the general public.

The philosophic basis of modern medical thinking seemed to be endangered by the introduction of psychologic factors. I refer to the principle that the body and its functions can be fully reduced to physical and chemical processes. It is very intelligible that modern medicine is protecting this principle with an almost fanatic watchfulness. Medicine owes to this principle its imposing development in the second half of the nineteenth century, and the maintaining of this principle gave medicine the rank of an exact science.

I do not think, however, that the knowledge of psychophysiologic interrelations by any means endangers the principle of the complete physical causality of the processes of life. This knowledge simply offers a new aspect of the problem of life different from the exclusively somatic analysis of biologic phenomena which was typical for the second half of the nineteenth century. The aversion to the introduction of psychologic factors in medicine is due to the fact that it reminds the physician of those not very remote days in which medicine was sorcery, and therapy consisted in expelling the evil demons from the body. Medicine, this newcomer among the exact sciences, has the typical mentality of all newcomers. It tries to make one forget its dark, magical past and therefore it has to watch out carefully that nothing suspicious should remain in it which could betray these undesirable remnants of its prescientific periods. Physics, this aristocrat of the natural sciences, can better afford to overthrow its basic principles and undergo a profound reorientation, whereas medicine feels it necessary to emphasize its exact nature in keeping out of its field everything that seems to endanger its scientific appearance. Indeed, among the exact sciences medicine became more popelike than the pope himself.

I do not need to go on with further characterization of the mentality of modern medicine. Physicians are well acquainted with it and also know that in recent years there has been a freer atmosphere. Especially the modern clinician is willing to recognize psychologic factors. The dogmatic denial or neglect of psychic influences on bodily processes is out of date and one could even speak at present of a psychologism in medicine which some authorities, such as Kraus, have felt the necessity of attacking from time to time. Indeed, formerly the attention of practitioners had to be called to the fact that, apart from bodily processes, there is a complex human personality with its important influences on bodily processes, whereas today physicians sometimes have to be reminded that apart from the conflict of the personality there is a complicated machine, the human body.

INFLUENCE OF PSYCHIC FACTORS IN PHYSIOLOGIC CHANGES

It is only natural that this new psychologic interest of the modern practitioner is usually very superficial since it is not based on systematic knowledge. Courses in psychoanalysis do not belong to the official curriculum of the medical student, and only later in his practice does he come in contact with them; as a rule, however, in a very unsystematic way. He takes cognizance of it mostly when his patient gets cured of his stomach neurosis or hysterical aphonia by a magnetopath or a Christian scientist after he was treated for a long time unsuccessfully with drugs and the whole inventory of official methods. But it must be admitted that at present it is not easy to get acquainted with the results of modern psychopathology; its systematic presentation is almost entirely lacking and even a superficial orientation in this field represents an especially difficult study for which the medical student with his exclusively somatic knowledge is not at all prepared.

It is well known in the history of medicine that the neglect of the psychic factors is new and typical of the recent laboratory period of medicine, whereas the physician of the prescientific period paid more attention to the whole life situation of his patient. This attitude, which flourished up to the middle of the nineteenth century, is best reflected in the contemporary literature which liked to describe, for example, tuberculosis as a result of a great psychic catastrophe. The discovery of the bacillus of tuberculosis naturally degraded this theory to a superstition and only recently has there been again a willingness to take into account, apart from specific germs and natural and acquired immunity, the

Read before the Central Neuropsychiatric Association, Rochester, Minn., Oct. 7, 1932.

psychic situation of the patient. But, even though the pressure of empirical observation does not permit one longer to overlook entirely the psychic factor, the concept that well definable physical-chemical processes are influenced by the psychic situation of the patient is too vague an idea to be taken very seriously. This psychic situation is usually referred to in general terms as nervousness, worries and excitements, and it is indeed unsatisfactory to connect such psychologic generalities with tangible physiologic processes. The fundamental importance of psychoanalysis for medicine is just here, that it substitutes for general psychologic terms, such as nervousness, worries and fears, well defined, highly specific, empirically observed psychologic facts. Thus psychoanalysis bridges the gap between psychologic and somatic facts.

And yet, just the introduction of psychologic details into etiologic thinking has provoked the greatest resistance on the part of medical circles. Under the pressure of empirical observation, modern medicine takes account of the influence of psychic factors on bodily processes, but it still is disinclined to go into the detailed investigation of these factors. There is a tendency to be satisfied with general terms such as nervous excitation or the pressure of the difficult life situation and to be willing to investigate physiologic changes called forth by intensive emotions such as rage or fear because they can be experimentally reproduced with animals. But at the same time one refuses to take cognizance of the finer analysis of psychic situations and problems of personality.

ANALYSIS OF PSYCHIC PROCESSES

It can easily be shown, however, that even the most common psychomotor processes cannot be satisfactorily described without the precise knowledge of psychic factors. As an example, the process of weeping or laughing may be considered, both of which are based on complicated psychomotor reflexes. A statement that sad ideas are able to influence the function of the lacrimal glands is a vague generality, the scientific uselessness of which becomes clear from the following imaginary experiment. The problem is to establish those conditions under which the physiologic processes of weeping is provoked in different individuals. Let it be assumed that to solve this problem a hundred individuals are exposed to a moving picture. It will then be observed that by a certain touching scene a certain percentage of the hundred are unable to control their tears and react with the unsuccessful suppression of sobbing, whereas another group are much less touched and a third group remain entirely cold and observe critically the plot without any emotional participation in it. It would be, however, entirely false to jump from these differences of reaction to the conclusion that the persons who remained cold are less sentimental in general, because a second experiment will prove that, confronted with another scene on the screen, a great percentage of those who remained undisturbed by the first scene will now react with intensive sobbing and crying. If this kind of observation in exposing the experimental individuals to different scenes is patiently followed up, it may be possible to distinguish certain specific situations to which certain groups of individuals react with weeping and the specific sensitiveness of certain individuals to certain situations might even be considered as a characteristic feature of them. Experimentation may lead one thus far in this complicated field, but, if one wants to have a deeper insight into the intricate process of weeping, it will be necessary to investigate each individual separately.

Such an individual psychologic study necessarily leads to very complex psychologic causal chains. In order to establish the specific sensitiveness of the experimental subjects to certain scenes, one must know their past life history, the whole development of their personality, because one will be able to understand the conditions under which an individual cries only from the experiences of his early life. The significance is now apparent of my former statement that the psychophysiologic process of weeping cannot be described by a general statement that certain sad ideas or impressions are able to influence the function of the lacrimal glands. If scientific demands regarding psychophysiologic processes are to be as strict as those accepted for somatic processes, the psychologic side of a psychomotor reaction has to be investigated with the same precision as is usual in studying organic processes.

Just this thorough analysis of psychic processes is made possible by the psychoanalytic technic. By this method it becomes possible to answer the question encountered in the former experiment, namely, why certain individuals are especially sensitive to certain situations.

PSYCHOGENIC DISTURBANCES OF THE ORGANS

In the field of pathology as well as in these problems of the everyday life, it is just as unsatisfactory to accept general phrases—for example, saying that the stomach symptoms of a patient are based on his nervousness and are provoked by steady excitements. Such an explanation is exactly as empty as the one that weeping is caused by sad ideas. A psychogenic stomach trouble is based on just as specific psychic processes as weeping or laughing or blushing. Here again it is necessary to establish the specific psychic content that is responsible for the stomach symptoms. Only such a detailed insight into the totality of a psychophysiologic process allows a real causal therapy.

Before going further, however, it seems advisable to define more precisely the term "psychogenic disturbance of organ functions." The analogy comparing it with psychophysiologic processes such as weeping, laughter or blushing is apparently not complete. Normally the individual who laughs or weeps is able at least to some degree to define the psychologic reason that impelled him to laugh or to weep. This is not the case with patients who are suffering from a stomach neurosis. Such a patient is not able to describe those emotions which are responsible for his stomach symptoms; he is not even aware of the psychic origin of his symptoms, he will deny it and try to find some somatic basis of his ailment, and in so doing is, in most cases, supported by his physician.

A further difference between the normal processes of expression such as weeping or crying and psychogenic disturbances of the organs is that in a normal psychomotor process of expression an emotional tension is adequately abreacted and relieved, whereas the pathologic function of an organ is a chronic disturbance that is not able to give full relief to the causating psychic tendency. The original observations of Freud and Breuer showed that an hysterical innervation takes place when certain emotions are excluded from being normally expressed. Such an inhibition of expressing an emotion is generally known today as repression. Emotions that normally, if they become conscious, are expressed through motor abreactions as laughter, weep-

ing, scolding, complaining, physical aggression, and through the psychosexual reflexes may be excluded from consciousness or, in other words, repressed. If they are excluded from consciousness however, they are excluded at the same time from these normal expressions. Hysterical symptoms can be considered unusual expressions of repressed emotions which, just on account of the repressions, cannot be relieved by the normal psychomotor reflexes. They are dynamic substitutes of normal expressions of repressed emotions.

NATURE OF THE FUNCTIONAL DISTURBANCES

This formulation allows a more precise definition of the so-called functional disturbances. These, though essentially identical with psychophysiologic processes of expressing emotions such as laughter and weeping, are nevertheless distinct from them by three characteristics: 1. In the case of a psychogenic disturbance of an organ the emotion which seeks expression is unconscious, that is to say, repressed. 2. The psychogenic disturbance is an unusual or, one should say, an incomplete expression of a psychic tension. 3. The symptom is not able to relieve the psychic tension in the same way as normal psychomotor reflexes do. The repressed tendency, excluded from the consciousness and thus from normal expression, sustains a steady tension which is the cause of the chronic dysfunction. Psychoanalysis was able to give these observations a formulation which is of general importance regarding the understanding of biologic processes.

Every psychic tendency seeks an adequate bodily expression. The normal way of such expressions goes through the system that is called the conscious ego, which is probably localized anatomically and physiologically in the cortex. The conscious ego has the control over those muscular innervations which serve to relieve psychic tendencies which may also be called psychic needs. If this passage through the conscious ego is blocked, an unusual relief comparable to a short circuit takes place: this is the hysterical dysfunction of the organs. Freud and especially his follower Ferenczi made the bold assumption that the whole body, all physiologic processes, even those which have no immediate connection with psychic life, may serve to relieve psychic tensions. The anatomic and physiologic basis of these psychophysiologic reactions is well known to everybody —it consists in the connection of the cortex to the different parts of the body through the peripheral and vegetative nervous system. The only difference between conscious and unconscious innervations is that the latter do not go through the conscious ego. If it is really desired to give an anatomic-physiologic explanation for this difference between conscious and unconscious innervations, it could be assumed that the conduction of the sensory stimuli to the motor fibers takes place in hysterical organ-processes through subcortical centers, and not, like voluntary innervation, through the motor centers in the cortex. However, so far, knowledge of the anatomic-physiologic basis of these processes is lacking, and even methods of investigating it do not exist. The psychoanalytic technic, on the other hand, makes it possible to reconstruct at least the psychic side of the psychomotor processes and to make conscious the unconscious content of them. The therapeutic significance of this procedure is that the unconscious psychic stimulus, after having become conscious, has the possibility of finding relief in the normal ways of expressing emotions which destroys the dynamic foundation of the neurotic symptoms.

The investigation of the psychic constellation of the patient is important even in cases of certain organic disturbances. It is well known to every physician that functional disturbances of a chronic nature may, in the course of time, lead to real organic disturbances. In cases in which the functional disorder is caused by psychic factors, it is well justified to speak of psychogenic organic disturbances because they are the end-results of chronic functional disturbances caused by psychic stimuli. So far as treatment is concerned, naturally, in all cases in which functional disturbances have led to a pronounced morphologic change, psychotherapy comes too late and a local therapy is indicated.

ORIGIN OF PEPTIC ULCER

It is not my aim here to give a complete survey of etiologic and therapeutic attempts of this kind and, therefore, I take for illustration one example, the etiologic problem of peptic ulcer. It is generally admitted today that local factors such as chronic hypersecretion, local anemia of the stomach, accidental erosions of the mucous membrane or disturbances of the motility of the intestinal tract, all of which may contribute in different combinations to the development of peptic ulcer, do not give a final solution as to the etiology. The detailed knowledge of all these local processes merely shifts the problem to the question "What is the cause of all these local changes, of chronic hypersecretion or local anemia or disturbances of the peristalsis?" From time to time the central origin of these local changes has been assumed by different authors.

Lately these assumptions have been corroborated by the observations of Harvey Cushing so far as he described several cases of sudden perforations of the stomach after operations in the midbrain. He assumed that the operation mechanically stimulated the midbrain centers, causing an irritation of the parasympathicus, which led to the local changes in the stomach. Under the influence of Cushing, Richard Leight succeeded by the use of pilocarpine in producing artificial peptic ulcers in dogs. Even though it is not justified simply to identify these experimental perforations with peptic ulcers, these experiments unambiguously show that local changes in the stomach, similar to peptic ulcers, may be called forth under the influence of nervous stimuli. Of course it must be recognized that in the majority of cases the central stimulus must have another origin than brain operations or the pharmacologic stimulation of the parasympathetic system. Psychoanalytic experience makes it most probable that in many cases the stimulation of the parasympathicus may have a psychologic basis. The chronic nature of most ulcers, the fact that the ulcer usually appears after a longer period of functional stomach troubles, indicates that the ulcer itself is merely the end-result of a long chain of events.

I have had occasion in several cases to establish the psychic origin of functional stomach troubles that preceded clinically diagnosed peptic ulcers, and in a lately analyzed case it was even possible to reconstruct with great precision those psychologic factors which were the dynamic background of functional stomach symptoms for a period of fifteen years. In this, as in other cases, I was able to distinguish certain specific psychic tendencies that seem to have a very near affinity to the functions of the stomach. If certain wishes and claims of a receptive nature, the wish to be loved, to be helped, to be taken care of by others, a

longing for the maintenance or revival of the infantile relation of the child to the mother, are repressed in the unconscious, they have a definite tendency to influence the functions of the stomach. Such tendencies, if present in adults, have to be repressed because they are incompatible with the dominating ambitions of the conscious personality: with the strife for independence, masculinity or activity. Repressed and thus excluded from gratification, they maintain a permanent tension which can be considered as a chronic unconscious psychic stimulus.

The question is only "Why does this kind of psychic tendencies have the inclination to influence the functions of the stomach?" For the trained psychoanalyst, however, this affinity of passive receptive tendencies to the stomach functions is not at all astonishing or unexpected. The child experiences the first gratifications of its receptive tendencies in being nourished; and thus the emotional association between the passive wish to be loved, to be taken care of, on the one hand, and the physiologic functions of nutrition, on the other, is established in the very first period of postnatal development. The intuitive knowledge of this psychic connection between the wish to be loved and to be fed is reflected in the German proverb "Die Liebe geht durch den Magen," which, translated into English idiom means "The way to a man's heart is through his stomach." Indeed, the first woman, Eve, seduced Adam by giving him the apple, which is a symbolic reference to the female breasts. This symbolic reference is especially manifested in the German expression "breast apples" (Brustäpfel). Moreover, everybody knows the stereotyped situation in the love stories of the Renaissance in which the woman experienced in love introduces the love scene by an exquisite dinner and uses this time aged and approved method of Eve to seduce an innocent youth.

FINAL EXPRESSIONS OF UNCONSCIOUS TENDENCIES

Now to return to the field of pathology: If the wish to be loved by a protecting woman according to the infantile pattern is excluded from consciousness because it hurts the self esteem of the personality, it mobilizes the emotionally associated wish to be fed. The dependence of the secretive functions and the motility of the stomach on psychic stimuli is well established through the studies of Pavlov and his school. The wish to be fed, which in such cases is independent from hunger and serves as a substitute for the wish to be loved, may serve as a specific and chronic stimulus which influences the functions of the stomach. The stomach exposed to this chronic stimulus constantly behaves itself as it normally does only during the periods of digestion. Naturally, only experiment can decide the correctness of this assumption. But no doubt in this way a chronic hypersecretion or hypermotility may arise which justifiedly can be called a psychogenic disturbance no matter in which special way the psychic stimulus changes the normal functions of the stomach. As may now be observed, the psychoanalytic investigation is able to give to the concepts "nervous hypersecretion" or "psychogenic organ disturbances" a well definable content in describing those specific psychic factors which produce certain functional changes.

I do not want to speak about therapeutic results gained by analytic treatment of such cases, since therapeutic success does not at all prove the correctness of theoretical concepts. It is well known that functional disturbances frequently yield to suggestion. Only the careful and comparative observation of physical manifestations and psychic processes allows conclusions regarding the causal connection of psychic factors with physical symptoms.

I realize that such a brief reference to clinical observations is not convincing; even a citation of all details would not be a satisfactory substitute for direct observation. Even a complicated surgical operation cannot be described very satisfactorily. Description can never make up for one's own observation. Psychologic descriptions are even more difficult and subtle than surgical procedures, and, therefore, in this field direct observation is absolutely indispensable. My short reference to clinical material therefore has less the purpose to prove the correctness of my statements than to present an approximate idea of the specific nature of those unconscious psychic tendencies which are discovered as the motor powers behind certain functional disturbances. I do not say either that the knowledge of the psychic, that is to say, dynamic, background of the symptoms is able to give a complete etiology of those functional disturbances which may lead in time to peptic ulcers. It remains for the future to describe, with the help of simultaneous somatic and psychologic analysis of cases, the complicated concatenation of psychic and somatic factors. What I consider as established is the fact that many organic cases develop according to the following general scheme: 1. There is an originating chronic psychic stimulus in the form of a repressed unconscious psychic tendency. 2. This leads to a functional disturbance of an organ. 3. The last phase manifests itself in organic morphologic changes, the end-result of the functional disturbance.

The choice of the organ that serves for the expression of unconscious tendencies depends on the specific nature of this tendency. Just as passive receptive claims to be loved have an intimate relation to the alimentary tract, so do fear and anxiety seem to have a close connection with the circulatory system, whereas the emotions of spite, stubbornness or rejection of the environment may frequently, if they are repressed, find expression in the disturbance of the sphincter-function of the anus.

So far as therapy is concerned, the psychologic approach is indicated only as long as the functional disturbance has not yet led to organic changes that make local therapy necessary. Consequently, psychotherapy has mainly a prophylactic value. It consists in giving the patient the possibility of relieving psychic tendencies in the normal way by making conscious those repressed tendencies which just on account of repression, could not be expressed normally and had to find unusual, that is to say, pathologic, expression.

CONCLUSIONS

The influence of emotional factors on the vegetative nervous system is so well known today that this general statement would not have justified my holding the reader's attention to this subject throughout the length of this paper. What I wanted was to emphasize the specific nature of those psychic factors which participate in psychophysiologic reactions. The trained psychoanalyst has the same feeling in seeing how easily internists are contented with such general terms as "a psychogenic disturbance," "a nervous palpitation," or a "nervous dyspepsia," as a physician has in reading in medical books that are over a hundred years old about bad or thick blood, unclean urine or black bile. The same scientific standards required by physicians in describing organic processes, a clear and precise knowl-

edge of the physicochemical background of biologic processes, psychoanalysis requires in dealing with the problems of human personality. The description of a psychophysiologic process can be considered satisfactory only if the psychic side is as precisely known and described as the physiologic side of the process.

My statements can be summarized in two points: 1. I wanted to emphasize the tendency of unconscious psychic processes to find bodily expression and call attention to the special affinity of unconscious processes to the vegetative nervous system. 2. I wanted to demonstrate the specific nature of unconscious psychic factors that represent the psychomotor basis of certain functional disturbances. The general statement that emotional factors are able to produce functional disturbances in different organs is unsatisfactory from the etiologic as well as from the therapeutic point of view. For a causal therapy, it is just as necessary to clarify in detail the psychic factors as to know precisely the somatic processes.

The desire of many physicians to substitute for psychologic descriptions the corresponding physiologic processes in the cortex and in the subcortical centers is noteworthy but belongs to the future and, being merely a desire, does not justify the neglect of psychologic facts that are known today. Furthermore, it is an open question whether the precisest knowledge of brain processes will ever be able to explain the complicated psychic relation of the individual to the environment just as satisfactorily as the knowledge of the psychic circumstances.

It may sound unusual that many of the functional troubles of the inner organs are based on the disturbances of the individual's emotional relation to his environment. In considering the whole structure of the nervous system it manifests a certain division of labor in that the relation to the environment, on the one hand, and the regulation of the inner processes, on the other hand, are divided between the cerebrospinal and the vegetative nervous system. The voluntary innervations, which are subject to the control of the cerebrospinal system, regulate the attitude to the environment; the inner organ processes are controlled by the automatic functions of the vegetative centers. A psychogenic disturbance of an organ can be considered as the last result of a disturbed emotional relation to the environment. It represents a confusion in the division of labor of the nervous system: the dividing line between the inner and foreign politics of the organism is mixed up. If a psychodynamic quantity which under normal conditions would lead to an external action becomes repressed, it takes a wrong pathway and instead of a voluntary innervation it leads to innervations in the vegetative system. Thus, for example, in the place of the normal expression of love or hate, an inner process is influenced. This pathologic deviation of a psychodynamic quantity from external action, that is to say, from voluntary innervation to the innervation of a vegetative organ, can be compared with a social phenomenon, which so often takes place in the politics of the nations. Ambitions in the field of foreign politics which become frustrated by a military defeat usually lead to an overheated atmosphere in the inner politics of the nation. This is best shown by the fact that revolutions start usually after lost wars and that the method which has proved to be the best to check revolutionary movements is to start military action against a foreign nation. Inner social tensions can be best relieved by diverting the energies that are engaged in inner affairs outward in conducting them into the channels of foreign politics. And, vice versa, the decrease of the possibilities of active foreign politics enhances the danger of inner social difficulties.

Every neurosis, no matter whether it is expressed merely by psychic processes or by bodily disturbances of functional nature, is the result of a defeat of the individual in his psychic relation to the environment, in his foreign politics. Every hysterical organ disturbance is the dynamic substitute for omitted actions. The emotions and wishes to which the individual cannot give expression and relief in actions concerning the environment find expression in the unintelligible tacit language of inner organic processes.

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THE HAZARDS OF INTRAPERITONEAL INJECTIONS

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Intraperitoneal injections of physiologic solution of sodium chloride, first introduced by Blackfan and Maxcy [1] in 1918, have been employed extensively in the treatment of dehydration in infants. More recently the administration of dextrose,[2] diphtheria antitoxin,[3] neoarsphenamine,[4] iron [5] and blood [6] has been recommended by this route. Some authors [7] have considered typing or cross agglutination unnecessary preliminary to this method of blood transfusion.

The use of the intraperitoneal route permits more rapid introduction into the body of relatively larger quantities of fluid than is possible by hypodermoclysis. It is also easier than venipuncture; hence its popularity in the treatment of infants by physicians in the numerous small hospitals in which interns are not available.

Some of the dangers of this procedure, as illustrated by the cases reported in this article, are:

1. Perforation of the intestine.
2. The introduction of incompatible blood into the circulation.
3. Hemorrhage from injury of the "obliterated" hypogastric artery.

It is said to be exceedingly difficult to perforate with a needle the intestine of living animals or of cadavers. There is a widespread conviction that intraperitoneal injection is entirely safe in the absence of marked abdominal distention or of inflammatory disease of the abdomen. It is the practice in some large clinics and on the part of many pediatricians to ignore moderate tympanites when fluids are needed. The dearth of unfavorable reports in the literature suggests that this feeling of safety is well founded.

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2. McLean, Stanford, and Lang, C. A.: Fluid Injections in Dehydrated Infants, Am. J. Dis. Child. **19**: 359 (May) 1920. Sanford, H. N., and Heitmeyer, P. L.: Intraperitoneal Use of Dextrose in Treatment of Diseases of Children, J. A. M. A. **90**: 737 (March 10) 1928.
3. Platou, E. S.: Arch. Pediat. **40**: 575 (Sept.) 1923.
4. Rosenberg, William: The Intraperitoneal Administration of Neoarsphenamine, J. A. M. A. **82**: 682 (March) 1924.
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7. Griffith, J. P. C., and Mitchell, A. G.: The Diseases of Infants and Children, ed. 2, Philadelphia, W. B. Saunders Company **1**: 275, 1927. Hill, O. W.; Smith, J. T., and Cross, W. R.: Arch. Pediat. **43**: 186 (March) 1926. Cole and Montgomery.[6]

The only precautions ordinarily taken to obviate perforation of the bowel consist in using a rather dull needle with a short bevel and in pinching up the tissues of the abdominal wall as the needle is introduced. In most clinics much emphasis is placed on avoiding injury to the bladder. The midline below the umbilicus is commonly chosen for inserting the needle because this is known to be a relatively avascular area.

If the peritoneal route is to be used for injection of fluid, the anatomic relationships of the region must be known. The linea alba [8] is a tendinous raphe in the midline of the abdomen, formed by the blending of the aponeuroses of the obliqui and transversi. In its lateral margins for a short distance below the umbilicus run the obliterated hypogastric arteries (lateral umbilical ligaments). Most authorities agree with Gray [9] that "at birth when the placental circulation ceases, the pelvic portion of the artery remains patent and constitutes the hypogastric . . . of the adult; the remainder of the vessel is converted into a solid fibrous cord" and again [10] "of the hypogastric arteries the parts extending from the sides of the bladder to the umbilicus become obliterated between the second and fifth days after birth and project as fibrous cords."

The following five cases are reported because they illustrate some of the dangers encountered in using the intraperitoneal route. They occurred in the comparatively limited experience of one man in hospital and private pediatric practice during the course of nine years. It is felt that accidents similar to those reported may be more common than has been realized heretofore, although reports in the literature are rare.

REPORT OF CASES

CASE 1.[11]—*History.*—A male infant, aged 6 weeks, was admitted to the pediatric service of the New Haven Hospital, Aug. 14, 1923, because of acute intestinal indigestion with intoxication. Death occurred, August 29. Intraperitoneal injections of saline solution were given almost daily as well as repeated intravenous blood transfusions. During the last week the abdomen, which had been scaphoid, became distended. Autopsy revealed bronchopneumonia, acute peritonitis and two perforations in the jejunum. The perforations were unquestionably traumatic in origin. There were no adhesions between the intestine and the parietal peritoneum.

Comment.—The usual precautions of using a dull needle and and of pinching up the tissues were observed. During the last week of life, moderate abdominal distention existed. One must infer from this case that tympanites constitutes an absolute contraindication to intraperitoneal injections.

CASE 2.—A Negro boy, aged 5 years, was admitted to St. Leo's Hospital, May 13, 1926, for surgical repair of a right inguinal hernia. After a successful operation he was referred to the pediatric service for treatment of sickle cell anemia and splenomegaly. Since at that time there were in the literature no reports of the failure of splenectomy to cure this disease, it was planned to overcome his anemia with repeated blood transfusions and then to perform a splenectomy. Three hundred cubic centimeters of citrated blood was administered intravenously, May 23. This was followed in a few hours by a chill and a moderate febrile reaction. Considerable improvement in his general condition ensued, and a second transfusion was given, June 11. Cross agglutination was not repeated, as the same donor was used. After 50 cc. had been injected intravenously, the needle point became dislodged and the 175 cc. of blood remaining was administered intraperitoneally. Within two hours a violent local and general reaction ensued with chills, high fever, extreme tympanites, cyanosis, severe abdominal pain and vomiting. After twenty-four hours the urinary changes of acute hemorrhagic nephritis appeared and marked jaundice was noted. These symptoms persisted for four days and then their intensity gradually diminished. The abdominal symptoms resembled closely those seen in the course of acute peritonitis. This unfortunate accident so alarmed the parents that they refused to permit another transfusion or a splenectomy. The patient was discharged two weeks later in good condition except for marked secondary anemia.

CASE 3.—*History.*—A white boy, aged 2 years, was admitted to the Clinic Hospital, March 3, 1927, for treatment of a chronic infection of the throat and ears and severe secondary anemia. An intravenous transfusion of 250 cc. of citrated blood was administered, which was followed by a transient febrile reaction without chills, cyanosis or dyspnea. Two weeks later a second transfusion was given from the same donor, whose blood had cross agglutinated perfectly on the first occasion. Through a misunderstanding, the matching was not repeated. After 25 cc. had been given into the median basilic vein, the needle point became dislodged. The remaining 225 cc. of citrated blood was administered intraperitoneally. Within two hours a terrific local and general reaction appeared, characterized by chills, high fever, vomiting, extreme abdominal distention and pain. The vomiting was so severe that for four days nothing taken by mouth was retained, and it was necessary to administer fluids subcutaneously. The urinary changes of acute hemorrhagic nephritis appeared. After five days these serious and alarming symptoms ameliorated, and the patient thereafter made a gradual and complete recovery.

Comment.—Cases 2 and 3 emphasize the necessity, now well known, of cross agglutinating the bloods of donor and recipient prior to every transfusion, irrespective of whether or not the same donor has been used previously with impunity. They also bear out the known facts that an intraperitoneal transfusion is a true transfusion [6] and that preliminary cross agglutination is a sine qua non of this procedure as well as of intravenous transfusion. It is quite probable that the violent peritoneal reaction so delayed absorption into the circulation of the incompatible blood that the kidneys were able to survive the strain of excreting the offending substance. In this sense, intraperitoneal administration may have been life saving.

CASE 4.—*History.*—A full term male infant, aged 5 days, was admitted to the Sternberger Children's Hospital, Aug. 2, 1931, because of vomiting. Examination revealed dehydration and an atresia of the esophagus. Since the atresia was of the type in which a communication exists between the stomach and the lower respiratory tract, the parents were told that nothing could be done for the child. They insisted that dehydration be overcome. Accordingly, 100 cc. of salt solution was administered intraperitoneally in the usual location and with the customary technic. The infant died four days later. Autopsy revealed atresia of the esophagus, a communication between the stomach and the trachea, and a huge hematoma in the parietal peritoneum arising from a punctured right "obliterated" hypogastric artery. The vessel was injured at a point 1 inch (2.5 cm.) below the umbilicus and at this level had a patent lumen. Gross serial sections revealed a patent lumen up to the umbilicus. A similar degree of patency was demonstrated in the corresponding vessel on the left.

Comment.—A hemorrhage so great might well have been fatal of itself in a small, feeble baby. Apparently, the lumen of the "obliterated" hypogastric artery is not always obliterated by the fifth day of life. There was no bleeding elsewhere than about the injured vessel. This militates against the possibility of a blood dyscrasia.

CASE 5.—*History.*—A premature male infant, aged 3 weeks, weighing 4 pounds (1,814 Gm.), was admitted to the Sternberger Children's Hospital, July 20, 1931, because he was not thriving. He gained slowly until an infection of the upper respiratory tract supervened, July 30, with vomiting, diarrhea and dehydration. One intravenous blood transfusion and numerous intraperitoneal injections of salt solution were administered. Following the last injection, August 9, the infant failed rapidly and died within twelve hours. Postmortem examination revealed bronchopneumonia, a huge hematoma

8. Gray's Anatomy, ed. 20, 1918, p. 417.
9. Gray's Anatomy, ed. 20, 1918, p. 615.
10. Gray's Anatomy, ed. 20, 1918, p. 542.
11. This case is reported with the permission of Dr. Grover F. Powers, professor of pediatrics, Yale University School of Medicine.

about the right lateral umbilical ligament, and a large amount of blood in the pelvis and right lumbar gutter. The right "obliterated" hypogastric artery had been punctured about 1 inch (2.5 cm.) below the umbilicus.

Comment.—There was no deviation from the usual size and sharpness of the needle or from the ordinary technic in giving this injection. The hemorrhage was great enough to have assisted materially in the fatal outcome. Gross serial sections of this vessel and its mate revealed patency of the lumens comparable to that seen in the previous case.

Whether such patency exists commonly after the fifth day of life or only in premature or unusually small infants remains to be determined. However, these two incidents have left the indelible impression that intraperitoneal injections are dangerous in premature or new-born infants when administered in the midline below the umbilicus. It is realized that very few infants of this type need parenteral fluids. In such cases hypodermoclysis or intraperitoneal injection elsewhere than in the midline suffices.

SUMMARY

In one case, perforation of the intestine occurred during intraperitoneal injection of saline solution.

In two instances, incompatible blood administered intraperitoneally produced violent local and general reactions.

In two cases, serious hemorrhage resulted from puncture of the "obliterated" hypogastric artery during the course of intraperitoneal injections in very young infants.

CONCLUSIONS

1. Abdominal distention is an absolute contraindication to intraperitoneal injection.

2. The introduction of unmatched or incompatible blood into the peritoneal cavity is dangerous and unwarranted. Cross agglutination before each such transfusion is necessary, irrespective of whether or not the same donor previously has been used with success.

3. In premature or very young infants, intraperitoneal injection in the midline below the umbilicus may produce serious hemorrhage by wounding the "obliterated" hypogastric artery.

4. Intraperitoneal injection, while affording the most satisfactory method of administering fluids parenterally to infants, is not so entirely devoid of danger as is generally believed.

371 North Elm Street.

Diagnosis of Coronary Thrombosis.—Let us remember that coronary thrombosis is primarily an arterial disease. Therefore the recognized marks of arteriosclerosis are the signs to be sought. Of these may be mentioned the accentuated aortic second sound and the thickening of the superficial arteries, of the finer visible arteries in the retina, and of the largest artery—the aorta—as revealed so clearly by radioscopy. Although it is true that the heart sounds are often distant, less distinct than usual, we dare not place much reliance on a sign so common in other conditions and so dependent on the personal factor. The heart is little or not at all enlarged unless there has been associated hypertension to cause it. The diagnosis will be helped by requiring the patient to map with his index finger (not with his hand) the total area of the pain. This will almost invariably include part of the sternum, a strong diagnostic point being sternal pain. It is best to avoid the ambiguous phrase of "pain over the heart," with its loose associations in the mind of doctor and patient, "sternal" being a safer term than "precordial" for use in diagnosis, which, as already emphasized, rests upon the patient's description of his attack. Fortunately the electrocardiograph provides evidence which compensates for this absence of physical signs. In differential diagnosis we must be prepared to reject the patient's belief, often no more than a pathetic hope, that it is indigestion.—Parkinson, John: Coronary Thrombosis, *Brit. M. J.*, Sept. 17, 1932, page 550.

CORONARY OCCLUSION AND FATAL ANGINA PECTORIS

STUDY OF THE IMMEDIATE CAUSES AND THEIR PREVENTION

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The incidence of angina pectoris associated with coronary artery disease is increasing. It probably will continue to increase if medical progress continues and greater numbers live to reach angina ages. Its control is beyond the horizon of preventive medicine, nor is it at all likely that drug treatment or surgical measures will prove more than useful adjuncts to treatment in more than a small fraction of cases. One is forced, then, to rely chiefly on the daily regimen in giving advice to this increasing number of patients. It seems to us that we have been hindered in efforts toward improving the effectiveness of these daily regimens by a general belief that fatalities in angina pectoris are essentially haphazard in their origin and that regimens are comparatively ineffective to control them. One factor that has contributed to this attitude is that only recently have physicians attained a clear clinical picture of angina pectoris due to coronary artery disease and established comparatively satisfactory working association of the clinical events with their pathologic manifestations.[1] Investigators have naturally been concerned with diagnosis and pathology. Now, concentration on coronary phenomena tends to make one take a fatalistic attitude toward the control of angina pectoris. Case A is given as an example.

CASE A.—A lawyer, aged 52, known to have had angina on exertion for one year but able to carry on with his profession and live in comfort so long as he observed mild restrictions, while returning from a ten days' rest at a private camp was seized with angina, which persisted. Signs of coronary occlusion developed. Twelve days later, while apparently progressing satisfactorily, he died suddenly. Postmortem examination showed a thrombus occluding a ramus of the left coronary artery and infarction of a wide area in the left ventricle, which had ruptured.

The clinical and physical signs and pathologic report are impressive. What can one expect to accomplish with merely a regimen in the face of such threatened occurrences? How shall one value the information obtained later that this patient spent the days before his fatal attack on an alcoholic debauch? Its significance appears overshadowed by the results of the postmortem examination.

Another confusing factor that may tend to hinder the formation of clear rules for the daily regimen of patients with angina pectoris is that the most authoritative information on angina pectoris comes from modern articles that are based on analysis of a whole group of patients classifiable under angina pectoris.[2] The mem-

1. Levine, S. A.: Coronary Thrombosis, Its Various Clinical Features, Medicine **8**: 245-418 (Sept.) 1929. Mackenzie, James: Angina Pectoris, Oxford Medicine, New York **2**: 422, 1929. Herrick, J. B., and Nuzum, F. R.: Angina Pectoris, Clinical Experience with 200 Cases, J. A. M. A. **70**: 67 (Jan. 12) 1918. Brooks, Harlow: Concerning Certain Phases of Angina Pectoris Based on Study of 350 Cases, Am. J. M. Sc. **182**: 784 (Dec.) 1931. White, P. D., and Bland, E. F.: Further Report on the Prognosis of Angina Pectoris and of Coronary Thrombosis, Am. Heart J. **7**: 1 (Oct.) 1931. White, P. D.: Heart Disease, New York, Macmillan Company, 1931, p. 614. Blumer, George: Coronary Occlusion and Angina Pectoris, New England J. Med. **205**: 495 (Sept. 3) 1931. Thayer, W. S.: Reflections on Angina Pectoris, Internat. Clin. **1**: 33, 1923.

2. Herrick and Nuzum.[1] Brooks.[1] White and Bland.[1] White.[1] Blumer.[1]

bers of such a group include widely differing clinical problems which vary greatly in their importance in clinical medicine. Certainly in our whole group of such cases [3] and it is likely that our group resembles the others, we find many in which the disease appears as a comparatively merciful termination or merely an additional symptom of widespread disabling progressing arteriosclerosis, and other cases in which its first appearance kills or disables. For example:

CASE B.—A woman, aged 75, known to have had hypertension for twenty years, during her last two years increasingly feeble mentally and physically, contracted a moderately severe infection of the upper respiratory tract, from which she improved very slowly.[4] For four months she was confined to her hotel room under nursing care. One night she complained for the first time of angina pectoris, which grew worse; signs of coronary occlusion developed, and she died after four days.

Such cases are comparatively unimportant in clinical work. Such deaths are essentially inevitable. But there is a large group in which the patients have angina pectoris on sufficient exertion and have no other serious handicaps: patients who would be effective were it not for this limitation of their energy and their knowledge of its menace; many of this group are highly effective in spite of their limitations. For example:

CASE C.—A lawyer, aged 59, complains that, since the onset of cold weather, on climbing a steep hill from the railroad station to his home he has had to stop part way because of a tightness under the sternum, extending to right and left, which grows worse if he continues but disappears if he stops and does not return if he climbs slowly. He has no mental and no other physical disabilities. A thorough physical examination is negative.

This last is one of an important group of patients. Only this group shall be considered in this article.

Questionnaires that we have sent out from time to time to physicians who have referred cases have shown us that the majority of our patients who fall into the important group just illustrated, namely, those who when seen by us had been limited in their exertion by angina but had not up to that time been severely disabled (the group illustrated by case B) who had later died, have died quickly or slowly as the result of a coronary occlusion, or suddenly during an attack of angina.[5] This is in accord with the experience of others.

Because to some extent we have shared the essentially fatalistic attitude toward deaths among patients with angina pectoris, which we find is generally held by physicians and laymen, though we have always endeavored to furnish our patients with regimens designed to keep them within their effort limits as signaled by the production of angina pectoris, we have never felt surprised nor sufficiently curious when word came that an occlusion or fatal angina had occurred. From time to time, however, we have been impressed by cases with which we were closely concerned in which a coronary occlusion or death in angina immediately and dramatically followed unusual events. And we have been especially interested to note that in many of these instances the unusual events were preventable; cases A and D, for example.

CASE D.—A man, formerly an oarsman, who noted angina on exertion four years before his death, had for several years stayed almost free from angina and had carried on with his business effectively by adhering to a moderate regimen. Before a business trip he was examined and found to be in apparently very satisfactory condition. The second day away from home he was invited to luncheon at an athletic club. Immediately after luncheon, his host showed him a new rowing machine. He tried this so vigorously that he felt angina but continued the exercise in spite of this for a number of minutes, during which the angina increased. It continued to disturb him during an airplane trip in the afternoon; after dinner the angina grew worse; coronary occlusion was diagnosed; the patient remained an invalid with increasing congestive failure until his death a year later.

Such cases have suggested to us that a careful investigation of events that immediately preceded coronary occlusion or fatal angina in suitable cases might furnish evidence that these disasters were often not haphazard and might serve to change the usual rather fatalistic point of view for the better.

Our records and hospital records, no matter how meticulously taken, have proved nearly always insufficient to supply the desired information. The family physician was sometimes able to supply it, but not infrequently the family physician believed and told us that the patient had done nothing unusual before the disaster, when later questioning of a relative revealed extraordinary and often dramatic events. We have been forced nearly always to trace and interview directly the family of a deceased patient—a long task. In many cases, for various reasons we have been unable to obtain satisfactory data. It is not possible, because of inherent difficulties, to obtain definite figures on this point, but we judge that in not more than one case in five, when we were able to obtain satisfactory data, did such data fail to show significant information.

Significant Events that Preceded Fatal Angina or Coronary Occlusion in One Hundred Cases

Nature of Significant Events	Times Occurring in 100 Cases
Unusual and violent physical exertion	24
Unusual physical exertion	31
Unusually prolonged usual exertion (including loss of sleep and rest) resulting in unusual fatigue	44
Persistence in activities which had repeatedly produced angina	6
Travel	33
Emotional strain	13
Alcoholic excess	5
Gorging	16
Starvation	3
Acute infection	6
Surgical operation	4
Medication	2
Suicide	1
Unusual sexual activities	1

We have finally succeeded in obtaining sufficiently full and accurate records of the events that preceded a fatal angina, or an undoubted coronary occlusion fatal or not, in 100 of our private cases in which the information seemed to us sufficiently significant to warrant its consideration. In obtaining this information, we have been led to believe that fatal angina and coronary occlusion occurring in patients not previously severely disabled are not usually haphazard but are usually preceded by extraordinary departure from usual and reasonable habits of living. In the great majority of cases the departures from suitable living were easily preventable. In some cases, the preceding events were not easily preventable. It seems clear, however, that proper regimens, properly explained, with sufficient instruction of the patients would, if followed, have prolonged the lives of most of these 100 patients to an indefinite extent.

3. Private consulting practice of Dr. B. E. Hamilton.
4. Hyman, A. S.: Postinfluenzal Angina Pectoris, J. A. M. A. **94**: 1125 (April 12) 1930.
5. It is well known, though we can find no clear statement of this supported by pathologic examinations, that it is not uncommon for patients who have angina to die in an attack without having had clear clinical evidence of occlusion and without occlusion being found at autopsy.

The data are too bulky to publish in full, but by classifying and enumerating the unusual significant events that have preceded fatal angina or coronary occlusion in each of the hundred cases, we have made the accompanying table. On the left are listed the significant events, on the right the number of times each event occurred in the hundred cases. Sixty-eight of the hundred cases had more than one of the listed significant events in the history.

UNUSUAL PHYSICAL EXERTION

Thirty-one patients had coronary occlusion or fatal angina directly following unaccustomed exertion, twenty-four others after unaccustomed exertion which could also be called violent. For a simple example:

CASE 80.—An elderly woman, who had had angina on exertion for two years but who had stayed well within her effort limits for many months, was drawn to her garden by the first warm day of spring. She worked steadily all morning and afternoon with shovel, rake and trowel. Directly after dinner she had a coronary occlusion.

In addition to gardening appear exertions unusual to the individuals making them, such as mountain climbing, rowing, changing a tire, pushing an automobile run out of gas, scraping a furnace, carrying heavy bundles, painting a boat or a room and ceiling, gunning, washing a large and active dog, and swimming.

CASE 88.—A man, aged 50, journeyed 150 miles to witness boat races, indulged in much alcohol, fell in the water, was helped out, watched the races, ran to his train and caught it but immediately had a coronary occlusion from which he did not recover.

We feel that if patients knew the variety of ordinary things that can be classed as violent exertion and that have caused disaster they would be better instructed. It seems that we should educate our patients with angina in the details of the daily life they should lead, having first learned ourselves what to tell them, just as we should instruct a diabetic patient in food values so that he can choose his diet in hotels, on journeys and on week-end parties, under any circumstances he may encounter, if we expect our patients to adhere to our plans.

PROLONGED ACTIVITY WITH FATIGUE

Unusually prolonged usual activity, including loss of sleep and rest, resulting in unusual fatigue, constituted a situation that appeared in forty-four of the hundred cases. This group consisted of people who had angina on sufficient exertion but were able to carry on their usual activities without it. One case will illustrate:

CASE 49.—A man, the head of a contracting business for many years, who, while holding to a moderate regimen, could tend to his daily work and ordinary customs of living without angina, added exactly 50 per cent to his hours of work, discharged many of his helpers, added to the amount of walking during the day, and became conscious of greatly increasing fatigue. He was stricken while at work.

Others are more dramatic.

It has been recommended that we summarize our instructions to patients suffering from limitation of exertion by angina by telling them to "do what they can." The inference is that anything is permitted provided it does not actually produce angina. The group of patients who had fatal angina or coronary occlusion following usual exertion and activities, not severe enough to produce warning angina but prolonged enough to cause unusual fatigue, show that this instruction is wrong. It seems obvious that though a man with angina may safely walk 2 miles at a slow speed without producing angina, it does not follow that he can safely walk 20 miles, even if he does not increase his rate and does not produce angina while walking. Using angina on exertion as a warning signal, we should, of course, instruct our patients in their activities so that each one will be within his immediate limit as indicated by this warning. But we must also protect them against fatigue, even if they induce it by activity in itself insufficient to produce the warning. There is an endurance limit. The importance of insisting on regular hours of work and rest without curtailment of hours for sleep and the routine rest after meals (pointed out later) stands out clearly as essential in giving advice.

PERSISTENCE IN ACTIVITIES THAT HAD REPEATEDLY CAUSED ANGINA

The importance of advice to patients not to crowd themselves up to the point at which they feel angina is almost generally recognized, and this series emphasizes the need of it.[6] Angina produced by exertion, disappearing in a few minutes with rest, the disappearance hurried by glyceryl trinitrate, is not commonly a terrifying experience. It is commonly merely annoying. Many patients do not hesitate to push themselves up to the point of producing it many times a day unless they are warned. In our opinion, patients may be tacitly encouraged to continue this habit by being supplied with glyceryl trinitrate or other vasodilators to "take as needed." Six of our series were of this sort. Either from insufficient instruction or, more likely, since several physicians whom we knew have done the same things, because they held a fatalistic attitude toward their angina, they persisted in crowding themselves to the point of angina several times each day. They habitually used glyceryl trinitrate. Though several of the six were able to carry on for months or even several years, all eventually had a disabling occlusion or fatal angina, which came on while doing the things that ordinarily produced their angina. The use of glyceryl trinitrate in the cases that we have in mind ought to be confined to unavoidable situations. It should not be habitually used as a means of allowing the patient to exceed his natural limits without discomfort.

We have just seen a borderline but instructive case:

CASE 55.—A well known physician, aged 62, a strong man, who loved and took vigorous exercise all his life, of late years mostly walking and golf, had for more than a year noted angina on exertion. For five months he had played golf by taking glyceryl trinitrate on the first tee before driving, again on the third tee, and sometimes later in the game. He scorned any regimen that diminished his golf activity. One morning he drove to his summer home, 175 miles. During three days he played golf, walked, washed his car and drove 150 miles. He considered that this was a period of loafing. The fourth day he entered a golf tournament. At the fifteenth hole angina began, but he finished the last three holes before he gave up and collapsed. The angina continued for twenty-four hours and clear evidence of coronary occlusion followed. He is now recovering.

Golf in a sense deserves consideration among the specific dangers for patients with angina and appears as a clear factor in eight of our hundred cases. It seems absurd to us as we review these cases to allow a man, faced with complete disability or death, to continue golf

6. Kahn, M. H.: Etiologic Factors in Angina Pectoris: An Analysis of 82 Cases, Am. J. M. Sc. **172**: 195 (Aug.) 1926. Osler, William: The Lumleian Lectures on Angina Pectoris, Lancet **1**: 697 (March 12) 1910.

after he has had angina. We sympathize with the golfer. We admire and share the spirit which says If I cannot live like a man, I do not wish to live. But we deplore the fact that so many of our friends—and perhaps if it came to us we would be no wiser—are so devoid of ingenuity or resources that they cannot occupy their days with intellectual pursuits or artisanship or other hobbies that are safe, sufficiently to make them happy in spite of no golf. Every golfer knows the frequent temptations to violent exertion. To enumerate a few: inclement wind and weather, very frequent short but stiff climbs, getting out of the rough, climbing out of a trap, frequent hurrying because of the delay of unsatisfactory shots and following players. Persisting in golf after angina is perhaps comparable to persisting in eating candy after diabetes appears.

TRAVEL

More striking is the group of thirty-three patients who had taken long journeys immediately before their disaster.

CASE 12.—A man traveled in his own car for twenty-four hours almost steadily; complained of fatigue; ate excessively; went to bed and had a fatal coronary occlusion.

CASE 27.—A woman, free from angina on moderate restrictions, prepared for and took a thousand mile railroad journey involving loss of sleep; she ate heartily on her arrival and, at the instigation of her daughter, immediately took a walk, which was no harder than she ordinarily accomplished without difficulty. While returning from the walk she was stricken with a coronary occlusion, which was fatal in ten days.

In no case was the journey itself believed to be the only factor. In the cases of twenty-one of those who took long journeys there was prolonged usual activity in preparation for or during the journey, with definite loss of sleep. But, again, in only six cases were prolonged journeys with prolonged exertion and loss of sleep the sole factors. For example: Clear overeating complicated eight of the cases in which long journeys had been taken. The others included such factors as violent exertion, indulgence in alcohol, and emotional strain. Journeys should not be preceded by fatiguing preparations, allowed to induce fatigue, or followed by continued activity, or they should not be taken. Regular hours for sleep, for meals and for rest after meals should be observed as rigidly by a patient with angina when away from home as should diet be controlled by patients with severe diabetes when away from their own table.

EMOTIONAL STRAIN

Unusual emotional strain appears as a factor that cannot be omitted in twelve of these hundred cases. John Hunter proved that he did not exaggerate when he said that his life was in the hands of any rascal who chose to worry him. We know of one contrasting patient:

A gentleman of the old school, famed for his easily aroused ire, found at the age of 70 that indulgence in bad temper caused him angina. He succeeded completely in controlling his disposition and lived for ten years in a forced good humor.

In three instances, coronary occlusion or fatal angina followed violent loss of temper during business arguments.

CASE 45.—A physician, aged 62, was stricken at a wrestling match. He had been able to continue his profession successfully though living under close restrictions because of angina elicited both by exertion and by emotion. A veteran athlete, he was fond of watching boxing, wrestling and football but had for many months avoided them because the excitement caused him angina. A particularly tempting wrestling bout made him break his rule and he died in his seat at an exciting period of the match. One of us watched from the balcony while his body was removed through the crowd.

Two patients had their attacks at football games. In one of these cases a long journey and loss of sleep were other factors. Three patients had coronary occlusions directly after bad news about a son. In one case the son had tuberculosis; in the second case the son contracted an unfortunate and undesired marriage; in the third case the son died. These were not the sole factors perhaps, nor can such factors be easily prevented. We know of another patient, not in this series, who had a coronary occlusion a few hours after news that a son had been detected in dishonesty.

Two patients stated emphatically that unaccustomed public speaking produced angina. Each patient said the speech was his first attempt. Loss of sleep and in one case prolonged unusual business activity were coincident factors. Each patient had just previously been promoted to an important executive position. In each case the angina was due to coronary occlusion. We know many people with chronic angina who are able to speak without difficulty and, in particular, one clergyman who speaks with great vigor yet who is unable to walk to his church and must climb to his pulpit slowly. Advice in this connection and in general must be carefully individualized; it is the degree of emotion aroused and the unusual character of an effort that must be valued if advice is to have merit.

ALCOHOLIC EXCESS

Alcoholic excess immediately preceded coronary occlusion or fatal angina in five cases. For example:

CASE 31.—A man had for years made it his custom to retire for periods of about a week several times each year to a cottage, where he stayed by himself and drank almost without interruption. Only one person, a friend, knew of his alcoholic habits. Following the onset of angina on exertion, he took excellent care of himself for many months, when the desire for alcohol lured him to his cottage. He stayed drunk for a week, drove home (150 miles) and sent at once for his physician because of nervousness and a painful hemorrhoid. He was given gas-oxygen anesthesia, and the hemorrhoid was treated surgically. He remained in bed, wakened with angina four hours later, called his family, and died in a few minutes.

The factors in this case clearly include anesthesia if not surgical shock and a journey. But the whole picture is that of a man with easily controlled angina killing himself by a week of continued alcoholic indulgence.

GORGING

Clear overeating was a factor in sixteen of the whole series of a hundred cases. In three of the hundred, occlusion followed directly after an unrestrained gorging of food, with no other discoverable departures from customary living. In thirteen cases, excessive eating was associated with unusual and severe physical exertion or a journey. In many others, in which coronary occlusion or fatal angina was preceded by one or more clearly important departures from regimen, such as prolonged working and overexertion, and overeating was not listed as a factor, disaster actually occurred directly after a meal. For illustration:

A man would undertake some unusual exertion, such as removing storm windows and carrying them upstairs; tired from this, he would eat dinner and directly afterward be stricken. The hour directly after eating often proved the time for the onset of symptoms.

Rules immediately suggest themselves: First, the commonly given one, no exertion for an hour after a meal; second, the patient should never gorge, have three regular meals every day and not vary the quantity taken; third, if in spite of restrictions, the patient is forced into fatigue by prolonged work or journeys or loss of sleep, he should eat less than usual but should not fast.

STARVING

In one case doing without food appeared as a factor:

CASE 19.—A man, comfortable and functioning on light restrictions, did not eat during a heat wave because he had a notion that eating in very hot weather was harmful. He went to work as usual, except that he had no breakfast and perhaps felt a little tired, but he was without symptoms. On returning, he took a single glass of lemonade at 5 p. m., went to bed as usual at 10 p. m., and in a few hours wakened with angina, which proved fatal. He had taken nothing except one lemonade and water for about thirty hours.

CASE 71.—The patient developed an occlusion during a rapid diet reduction and insulin administration for diabetes.

This is in accord with recorded experience.[7]

It is possible that starving was a factor in causing a coronary occlusion which followed an operation in case 95, in which occlusion occurred three days after operation. Starving again may well have been a factor in another group in which occlusion or fatal angina occurred during acute infection.

CASE 22.—A man had an infectious diarrhea for five days during which he ate very little and died promptly of angina, probably due to an occlusion.

Somewhat similarly:

CASE 46.—A man spent a fortnight in bed with what was called "intestinal grip." He was given a highly restricted diet and died of coronary occlusion on his first day out of bed.

ACUTE INFECTION

In six cases, coronary occlusion or fatal angina occurred during, and apparently quite clearly as the result of, acute infections. In addition to the two just described (cases 22 and 46), patients 11 and 67 were doing well on moderately restricted regimens until acute infection of the upper respiratory tract occurred. In cases 61 and 20, of acute polyarthritis, coronary occlusion promptly developed. We have seen one other elderly man, not in this series, in whom an occlusion developed during rheumatic fever. Case 77 is included in the series of four cases in which fatal angina or coronary occlusion followed a surgical operation.

CASE 77.—The patient was operated on (nephrectomy) twenty-one days before a coronary occlusion, which proved fatal. An acute phlebitis with definite fever had been present for several days before the cardiac accident. The occlusion may well have been determined by this infection.

Seven cases closely associated with acute infections is a higher number than we would have expected in a series of 100 occlusions or fatal anginas occurring in patients not severely disabled previously. Our impression has been that such patients tolerated moderate infections well. We should regard acute infections in patients with angina as dangerous events.[8] It is likely that underfeeding should be carefully guarded against during the illness.

SURGICAL OPERATION

Four patients in this series were operated on, for good reason, but they had coronary occlusions, in three cases fatal, occurring from three hours to twenty-one days following the operation while they were still in bed. We will not elaborate on the danger of surgical operation[9] as a cause of fatal angina or coronary occlusion in patients with coronary disease whether or not the disease has previously signaled its presence by angina. We have had a fair number of patients with angina pectoris operated on successfully (the most common operation was prostatectomy) and have reported one case of angina complicated by exophthalmic goiter in which the angina itself was for a time markedly improved following the relief by surgery of the hyperthyroid symptoms.[10] We do not wish to give the impression that surgical operation is distinctly contraindicated by angina or coronary disease. These conditions add a small definite risk that must be valued. The danger from starving should be carefully avoided during convalescence from surgery in patients who are known to have or who are old enough to have coronary disease. Other factors, such as fatigue incident to preparing for and journeying toward a stay in the hospital, should be guarded against.

MEDICATION

Unusual medication appeared as a possible factor twice.

CASE 4.—A man took large doses of thyroid extract to reduce his weight; he noted that his angina was more easily elicited but continued to take it. A long automobile ride to his summer home, followed by hill climbing, were the other factors.

Thyroid feeding is known to produce angina on exertion in some patients, usually elderly patients.[11] In some patients with angina, it has aggravated the angina. Cases of coronary occlusion promptly following its administration have been reported. Nevertheless, we have given it to a small number of myxedematous patients who had angina; the angina has been aggravated but the drug continued without disaster and with eventual improvement in all respects.[12] One cannot make a satisfactory rule. But one can recognize the added burden that thyroid feeding imposes on a patient who has angina and can warn a patient to note angina if it occurs for the first time after thyroid feeding, and protect the patient by reduction of activities with a suitable regimen.

CASE 79.—The second patient, a woman, aged 70, had been troubled with very easily elicited angina for three years. For two days she took large doses of bromide to overcome sleeplessness and then slept for twenty-four hours. While still sleepy, a few hours after rousing, she had fatal angina.

The unusually prolonged sleep suggests that interference with eating habits in the direction of starving was another possible factor. We were prepared to find the administration of epinephrine as a factor in this series, but we did not.[13]

7. Joslin, E. P.: An Appraisal of the Present Treatment of Diabetes, J. A. M. A. **97**: 595 (Aug. 29) 1931. Root, H. F., and Graybiel, Ashton: Angina Pectoris and Diabetes Mellitus, J. A. M. A. **96**: 925 (March 21) 1931.

8. Smith, J. A.: Relation Between Angina Pectoris and Focal Infection, Virginia M. Monthly **56**: 666 (Jan.) 1930.

9. Butler, Stuyvesant; Feeney, Neil, and Levine, S. A.: The Patient with Heart Disease as a Surgical Risk, J. A. M. A. **95**: 85 (July 12) 1930.

10. Hamilton, B. E.: Congestive Heart Failure and Angina Pectoris, S. Clin. North America **6**: 644-650 (June) 1926.

11. Means, J. H.; White, P. D., and Krantz, C. I.: Observations on the Heart in Myxedema with Special Reference to Dilatation and Angina Pectoris, Boston M. & S. J. **195**: 455 (Sept. 2) 1926.

12. Ziskin, Thomas: Angina Pectoris Associated with Myxedema Heart, U. S. Vet. Bur. M. Bull. **6**: 24-26 (Jan.) 1930.

13. Cottrell, J. E., and Wood, F. C.: The Effect of Epinephrine in Angina Pectoris, Am. J. M. Sc. **181**: 36 (Jan.) 1931. Weiss, Edward: Fatal Coronary Occlusion Following Local Anesthetic, M. J. & Rec. **135**: 61 (Jan. 20) 1932.

SUICIDE

One patient in this series frankly committed suicide. Chronic disease is a large factor in suicide.[14] We know of one other among our angina patients, but there is a small suicide rate in angina.

UNUSUAL SEXUAL ACTIVITY

Excessive sexual activity was recorded only once as a probable factor in this series.

CASE 1.—In the case of an extraordinarily vigorous man, aged 71, it followed a long journey, loss of sleep, severe business efforts, excessive alcohol and gorging, and preceded another long journey over a period of forty-eight hours, when he paused because of a coronary occlusion, from which he recovered.

Questioning on this subject was not done in a routine manner because we feel that the difficulties in obtaining full information would not yield enough useful instruction to justify the effort and annoyance of collecting it. We may be mistaken. It is certain that many patients with angina continue their usual sex life without apparent harm; that departures from usual custom in the direction of violent exertion or prolonged fatigue are undesirable.

DIAGNOSIS ERRONEOUSLY REVERSED

In at least two instances in this series, disaster followed resumption of forbidden activities because the patient had been reassured by a physician that he had nothing wrong with him. The outstanding example is presented by case 15.

CASE 15.—A man, aged 50, had had angina on exertion for six months. Free from angina on restrictions for several months, he applied for life insurance and was told that his heart was perfectly sound. He hurried to his office and told his business partner the good news. To celebrate, they both ate heartily and indulged in alcohol freely, whereupon the patient was seized with fatal angina.

ANGINAS OR CORONARY OCCLUSIONS IN PHYSICIANS

Thirteen of the hundred fatal anginas or coronary occlusions occurred in physicians. In seven instances, the event occurred while on vacation, or during the twenty-four hours after the physicians had returned from a vacation and were extraordinarily busy with accumulated work. Three more had their disaster at the conclusion of a week end or directly after returning from week-end trips. Overeating, long journeys without sufficient time for food and rest, fatigue, or unaccustomed, prolonged or frequently repeated physical exertion occurred almost constantly. In each of these cases, as we have had the story, preventable, unimportant excesses, clearly unjustifiable in terms of happiness, stand out.

SUMMARY

From private consulting practice we have selected a group of patients within a whole series classifiable under coronary disease associated with angina pectoris; namely, patients otherwise without disability who have angina pectoris on exertion or excitement but are able to carry on without angina while adhering to a reasonable regimen.

We have found that such patients, when they die, usually die in angina or following a coronary occlusion. More often than not, such fatal anginas or coronary occlusions were immediately preceded by unusual departure from ordinary habits of living, and these departures were usually preventable.

We have analyzed the events that constituted departures from ordinary habits of living and that have preceded coronary occlusion or fatal angina in a series of 100 selected cases. This analysis furnishes material for improved regimens which should be useful in avoiding or postponing coronary occlusion and fatal angina.

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14. Stearns, A. W.: Suicide, New England J. Med. **204**: 9-11 (Jan. 1) 1931.

HOW DO REST AND COLLAPSE TREATMENT CURE PULMONARY TUBERCULOSIS?

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The basic principle in the treatment of tuberculosis in all its forms is rest. In tuberculosis of the lungs or of the joints the physician endeavors to obtain as complete a rest as possible of the diseased organs. More especially in pulmonary tuberculosis, complete and prolonged bed rest is advised in order to "immobilize the lungs" and "favor healing by fibrosis." During the past years, a number of surgical procedures have been adopted for reinforcing rest by mechanical splinting of the diseased lung, as pneumothorax, phrenic exeresis or thoracoplastic collapse.

It is peculiar, however, that very little investigation has been done so far on the physiologic action of this mode of treatment. It is thought that by rest fibrous tissue develops both in the joints and in the lungs and that the lesions are encapsulated in a fibrous shell, bringing its development to a standstill; or that "nature" is helped in its efforts toward the healing of the wound by allowing the scar tissue, a delicate and fragile structure at the beginning, to become solid and more resistant. This is about all that is found in the literature.

These explanations might be sufficient for clinical purposes but they cannot stand a more inquisitive scrutiny. Why and how does pulmonary tuberculosis improve when an efficient collapse therapy has produced anatomic closure of the cavities? Why within a few weeks after successful thoracoplasty does the sputum, which was loaded with tubercle bacilli before operation, become negative and the patient put on 10, 20 and 30 pounds in three or four months? Furthermore, what explanation have the aforementioned theories to offer for the spontaneous closure of large cavities, even without treatment by rest? Lastly, by what mechanism does rest favor fibrosis of the lung?

A clinical and experimental study of this interesting question has been carried on for the past two years in the pulmonary tuberculosis services of Metropolitan and Sea View hospitals and in the Department of Surgical Research of Cornell Medical College. The results of this work, still being carried on, have been given in detail elsewhere.[1] I shall give here only a summary of the results and of my conception of the physiologic mechanism of "rest" of the lung based on them.

Acid-fast bacilli in general, and more especially virulent human or bovine tubercle bacilli, not only are strict aerobes but they need a large amount of oxygen for continuation of life and growth. It has been calculated that an equivalent weight of cultures of human tubercle bacilli (H 37 strain) consumes about three times more oxygen than the muscle of a dog at rest

1. Coryllos, P. N.: Importance of Atelectasis in Pulmonary Tuberculosis, Am. Rev. Tuberc., to be published

(Novy and Soule,[2] Loebel, Shorr and Richardson [3]). Furthermore, if these cultures are deprived of oxygen, as when the air in the culture is being replaced by a neutral gas such as nitrogen, the respiratory metabolism of the bacilli falls to zero within from six to eight days. In three instances, cultures could not be obtained by Loebel, Shorr and Richardson [3] when oxygen starvation had been prolonged. Another point of importance is that tubercle bacilli cannot derive the energy necessary for continuation of life from anaerobic processes, for energy supplied to them in that way could have been only 1 and 2 per cent of the amount furnished by oxidation in Long's medium in air.[3]

These facts certainly have great clinical importance. In fact, if for any reason conditions of anaerobiosis are created in a tuberculous area of the lung or of any other organ, tubercle bacilli could not continue to thrive and grow. The lesion will remain stationary and then regress; the amount of bacilli and their toxic products will rapidly decrease.

Do such conditions of anaerobiosis ever develop in the lung and, if they do, under what circumstances? Do they occur in the tuberculous lung? What is their mechanism and what are the proofs of their existence?

In previous experimental work Dr. Birnbaum and I [4] have shown that, when a large bronchus is obstructed, the air entrapped in the territory of the lung corresponding to that bronchus will be completely absorbed. That the absorption of oxygen under these conditions may be complete is shown by the development in the atelectatic portions of the lung of strict anaerobes, as in the case of experimental putrid abscesses of the lung. It is a well known fact that only by obstructing the bronchus after injection into it of material with facultative or strict anaerobes can an anaerobic abscess develop.[5] Patchy or lobular atelectasis will follow obstruction of the small bronchi, provided collateral ventilation [6] has been suppressed by previous inflammatory thickening of the interalveolar septums.

It is well known that pulmonary tuberculosis, more than any other disease of the lung, is accompanied by early and marked bronchial lesions. Paegel and Henke [7] have described several forms of tuberculous bronchitis. Every one of them, exudative, caseous or proliferative, may produce bronchial obstruction leading to atelectasis. An important number of clinical cases of atelectasis in tuberculosis have been reported lately. Jacobaeus,[8] Packard,[9] Gatterdam,[10] Korol [11] and others have proved beyond any doubt that the majority of the so-called fibrotic lungs really are or have been atelectatic lungs. They have also insisted on the fact that in atelectatic lungs the evolution of tuberculosis seems to be far more benign and its prognosis far better than in nonatelectatic cases.

Of still greater importance is the application of these facts to the development of tuberculous cavities. A cavity is a hole in the lung, a loss of substance, produced by the elimination through the bronchi of the caseous necrotic material. A cavity, naturally, communicates with a bronchus by a more or less tortuous outlet, which often is visible in the roentgenogram; it gives the cavity a tennis-racquet form. I gave to these cavities the name of stem cavities.

The importance of this "draining bronchus" of the tuberculous cavity, completely overlooked thus far, is to my mind of paramount importance. First, it explains the peculiarly spherical form of the cavities in the living individuals, whereas on the autopsy table they are irregular in shape.[12] In fact, the difference in pressures inside and outside the cavity (atmospheric inside and negative outside) gives a physiologic and mechanical explanation of this spherical shape. Secondly, these "draining bronchi" have, I believe, a great bearing on the evolution of the cavity. In fact, three courses may be followed by these bronchial outlets; first, they may remain open; second, because of pathologic narrowing of their lumens they may allow ingress of air during their respiratory expansion and prevent egress of air during their expiratory collapse, producing a one-way-valve mechanism; third, they may become obstructed.

In the first case, in which the cavity remains in free communication with the bronchial tree, the number of bacilli in the sputum is considerable and the danger of spreading is always present. Gas analyses made by us on air specimens taken by puncture through the chest wall showed that the air contained in these cavities has a composition almost identical with that of bronchial air (oxygen, 17 per cent; carbon dioxide, 0.7 per cent [13]). The pressures in these cavities oscillated between — 1 and + 1 cm. of water, as in the bronchi.

In the second case, when a one-way-valve mechanism is produced, the cavity increases rapidly in size, and the pressure within it becomes positive (+ 3 cm. of water in one case); the percentage of oxygen decreases (15 per cent) and the amount of carbon dioxide increases (2.5 per cent); this is due to the fact that gas exchanges in the cavity are more advanced, because of the more difficult renewal of the air in them.[13] Dr. G. G. Ornstein, in whose tuberculosis service at the Metropolitan Hospital this investigation is now being carried on, made the remark that these cavities increase rapidly in size without any apparent change in their walls, as though they were inflated by the accumulation of air, and that during expiration the mediastinum is displaced toward the healthy side. In other words, one is dealing here with the development of an "obstructive emphysema" in the cavity.

In the third case, when the "draining bronchus" of the cavity becomes obstructed, the air contained in the cavity will be absorbed by the same mechanism as in

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atelectasis, and the walls of the cavity will collapse. This conception explains, I believe, the sometimes occurring spontaneous disappearance of cavities and more especially their collapse and cure after successful pneumothorax or thoracoplasty. In this way collapse of the cavities is determined by the collapse or kinking of their bronchus and is regulated, only, by the condition of their walls; the speed of absorption of the entrapped air and the ease or difficulty of shrinkage of the cavity depend on the degree of thickness of the wall, on its vascularity, on its permeability to gasses, and on its elasticity or rigidity. That compression alone is not sufficient for collapsing the cavity is shown in pneumothorax, when the presence of even one single adhesion—generally posterolateral, that is, in the direction of the upper bronchus—suffices to prevent collapse of the cavity, although the diseased lung is completely surrounded by the air of the pneumothorax. Thoracoplasty, which cannot suppress more than two thirds of the chest cavity, acts, I believe, by collapsing and "kinking" the bronchial outlets of the cavities and thus producing their closure. This is shown by the rapid disappearance of bacilli in the sputum after a successful pneumothorax or thoracoplasty.

In a closed cavity the air will be absorbed as in a closed pneumothorax and by exactly the same mechanism. An "atelectasis" will thus be produced in the cavity with complete absorption of its contained gases. In this way the condition of anaerobiosis will be instituted, causing marked biologic changes in the development of the tubercle bacilli, as previously mentioned.

A last point is the relation between tissue anoxemia—always present in atelectasis—and fibrosis. This subject is too vast to be discussed in this paper. Suffice it to say that, in ischemic paralysis of Volkmann, circulatory deficiency produces fibrous degeneration of the muscles of the extremity involved. Policard [14] considers fibrosis as the result of tissue anoxemia; old age, according to this author, is a result of "fibrosis" which is brought about by circulatory and, consequently, respiratory deficiency in the tissues.

On the other hand, it is generally considered today that tuberculosis is essentially a disease of the connective tissue. There is an active deposition of embryonic connective tissue cells around the tubercle bacilli. Another characteristic of tuberculous tissue is that it is avascular. These two conditions are particularly favorable to the formation of fibrous tissue, especially when the amount of oxygen brought to the surrounding parenchyma is decreased or altogether suppressed. This would explain, I believe, the well known but heretofore puzzling fact that tuberculosis more than any other disease leads to production of fibrosis and that it tends to spontaneous cure by this mechanism, especially when in the affected organs, circulatory activity is diminished, as by rest and immobilization.

Furthermore, it seems to me that in the so-called exudative forms of pulmonary tuberculosis the wedge-shaped patches of consolidation, so often localized in the infraclavicular region of the upper lobes, are but atelectatic areas; this formation is due to the early obstruction of a middle sized bronchus, by edema of their submucosa, following the intensive allergic response of hypersensitive pulmonary parenchyma to tuberculous infection which characterizes these lesions. The rapid "resolution" of these lesions could then be explained by the arrest in the growth of the tubercle bacilli due to the anaerobiosis created by the absorption of alveolar gases behind the obstructed bronchus. This conception finds strong support in the rapid development of these lesions (often within a few days and sometimes within a few hours), in the absence of breath sounds at their level, in the disproportion between stethoscopic and radiographic results, in the small number of bacilli found in the sputum, in the good general condition of the patient and in this rapid, often "miraculous" healing of the lesions without any trace left behind as in uncomplicated atelectasis or lobar pneumonia.

A number of other phenomena in the evolution of pulmonary tuberculosis find an easy explanation by this theory, which will be further elaborated elsewhere. My purpose in this short paper is only to point out to students of tuberculosis the relation of the pathologic disturbances of the physiologic gas exchanges in the lung to the mechanism of cure of tuberculosis by "rest" and "collapse treatment."

SUMMARY

The tubercle bacillus is a strict aerobe requiring large amounts of oxygen for continuation of life and growth. Absence of oxygen interferes with its development, as presence of oxygen inhibits growth of strict anaerobes. "Rest" and "collapse therapy" produce in the lung decrease or suppression of oxygen.

The evolution of tuberculous cavities can be explained by the condition of their "draining bronchi."

Development of fibrosis is closely related to anoxemia.

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HEPATOLENTICULAR DEGENERATION

REPORT OF A CASE WITH AUTOPSY

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NEW ORLEANS

Hepatolenticular degeneration is the name suggested by Barnes and Hurst [1] in 1925 for a rare, often familial, disease characterized by symptoms of extrapyramidal disturbance associated with a marked lobular cirrhosis of the liver. At autopsy, the extrapyramidal symptoms are accounted for by bilateral degenerative processes in the lenticular nuclei (Wilson's disease) and at times also in the thalamus, hypothalamus, pons and other regions (Westphal's pseudosclerosis). The name hepatolenticular degeneration is based on the opinion that the diseases first described by Wilson [2] and Westphal, often considered in textbooks as two distinct though closely related entities, are probably merely variations of the same disease. Strümpell [3] some years ago first grouped pseudosclerosis, Wilson's disease and paralysis agitans as the "amyostatic affections," thus indicating the close relation he believed these conditions bore to one another. Wechsler,[4] in his textbook, states that pseudo-

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sclerosis is probably a form of Wilson's disease. This opinion was upheld by Barnes and Hurst in their report on an exhaustive pathologic study of four familial cases.

The case reported here was first seen three weeks before death, but it was possible to obtain records that reveal the entire course of the disease, which in this case extended over a period of four years. The observations in this case will not be described in the order in which they were discovered; rather, an attempt will be made to assemble the data in chronological order and to present them in such a manner that the course of the disease will be more easily visualized. It will be readily seen that, as the disease progresses, this condition gives rise to great confusion in diagnosis and often to problems that are impossible of solution.

REPORT OF CASE

A white boy, aged 7 years, was one of sixteen children born to ignorant and indigent creole parents. Eight of the children had died in infancy; one of "blood disease" (he was covered with blue spots before death). The patient, then, was one of eight living children, all of whom had been in good health in the past; the patient himself had had only measles and whooping cough. About the beginning of October, 1928, the patient's father began to notice that his son had begun to exhibit a "swelling of the stomach." About one week later the child began to suffer with shortness of breath, and just a few days before admission to the hospital he had had a chill. Examination at that time showed that the patient was well developed and well nourished, with chronically diseased tonsils and an abdomen distended with free fluid. No other abnormal physical conditions were found. The patient was admitted, Oct. 28, 1928, and remained in the hospital for a period of nine months. During this time the physical conditions remained the same; repeated urinalyses revealed nothing of note, and several blood Wassermann reactions were negative. Blood nitrogen, chloride and dextrose remained within normal limits. The icterus index was 28 units. Roentgenograms revealed evidence of a healed hilar process. The patient did not have a fever at any time during his stay in the hospital. The diagnosis of atrophic cirrhosis of the liver was made. He was given a salt-free, low protein diet and a course of ammonium chloride and merbaphen. The diuretic measures failed to produce any improvement in his condition, and after nine months of symptomatic treatment he was discharged from the hospital, July 10, 1929.

Apparently after returning home he managed fairly well for some time, for he was not again heard from until Nov. 22, 1930. It seems that he had begun to suffer with an exacerbation of his symptoms during the early part of this month. The father had again begun to notice that his son's abdomen was becoming swollen at times. He stated that exertion seemed to reduce the swelling on some occasions. Swollen ankles were noted at times. The parent described the child as being sluggish in contrast to his usual overactivity. On occasions the child was seen almost to "lose control of his knees, making him appear very awkward." Another feature of the history at this time was that for the past year the child had been having frequent "chills," usually at night, which were so severe that during them he would shake the bed. Some time before his admission to the hospital he had had a tooth extracted, which had been followed by hemorrhage of two days' duration. An interesting note in the family history obtained at this time was that concerning a sister of the patient, whose abdomen had begun to swell in the same manner as had the patient's. Examination of the patient at this time showed him to be "fairly well nourished," the only abnormal conditions being a slight anterior cervical adenopathy, marked ascites, splenomegaly, slight edema over the tibias and a peculiar gait, "as if his knees were weak." The urine showed an occasional hyaline and granular cast. The red blood cells numbered 4,290,000 and the leukocytes 6,200, with an eosinophilia as the only abnormal feature of the differential count. The stool showed no ova or cysts. The fragility test showed beginning hemolysis at 0.36 per cent and complete at 0.32 per cent. The nonprotein nitrogen was 46 mg. per hundred cubic centimeters of blood. The blood Wassermann reaction was negative. A tentative diagnosis of subacute nephritis and Banti's syndrome was made. About three weeks after his admission to the hospital the patient had a rather large hematemesis consisting of about 300 cc. of fresh blood. This occurred during an attack of acute pansinusitis with otitis media and therefore rendered the patient quite pale and weak. Several days later a gastrointestinal series showed no evidence of organic disease of the stomach or of the duodenum. A roentgenogram of the thorax showed the same tracheobronchial and hilar conditions reported two years before. An injection of tuberculin produced no local, general or focal reaction. With only symptomatic treatment, the patient gradually improved and was discharged, Feb. 5, 1931.

Again the patient seems to have had an almost complete remission of symptoms. He was readmitted to the hospital, June 4, for the treatment of a fracture of the clavicle. The notes at this time state that the only abnormal physical conditions were the fracture of the clavicle and a splenomegaly. There was neither edema nor ascites. The only reason for admission was the injury, and when this had been dressed the patient was discharged, four days later. This respite lasted until the early part of February, 1932.

February 21, the patient was again admitted to the hospital, for the last time. Little information could be obtained at this time, as the child could not speak and the mother could furnish but little history. The examination revealed a rather puzzling combination: The patient was well developed; he was found lying in bed crying quite loudly. On being questioned as to the cause of his vociferations the patient merely stared at the examiner. At first it was believed that this lack of vocal response was due to mental impairment or to deafness. By this time it was noticed that the mouth was held open continuously, and it was found that this was due not to relaxation but to continuous spasticity of the antagonistic muscles of the jaw with preponderance of those which open it. After forcing the jaw closed, it was almost as difficult to reopen it forcibly, though if left alone it would slowly reopen spontaneously, and this in spite of any amount of effort expended by the patient in attempting to keep it closed. This state of affairs explained the lack of vocal response to questioning: the patient was unable to speak. The open mouth led to constant drooling of saliva, which was always blood tinged, owing to constant bleeding from the margins of the gums. This drooling of saliva was exceedingly disagreeable to the patient, and it was a common experience to find him attempting to hold the jaw closed with his hands. In this endeavor he was never more than moderately successful, because of the involvement of the upper extremities. The left upper extremity was very spastic and exhibited a moderately fine tremor whenever voluntary movements were attempted and whenever it was handled by the examiner. Despite the spasticity, no reflexes could be elicited in this member. It was capable of but little voluntary motion, and that which was possible was very slow and labored as well as accompanied by the tremor mentioned. The right upper extremity was not rigid at all times but became so only when voluntary motion of it was attempted or during examination. He had more voluntary control over this member than over its partner, but there was a well marked tremor on attempts to carry out finer movements, such as writing. The fingers of the left hand were quite rigid and later on this condition prevailed also on the right side. Objects were grasped slowly and with great effort, and released with equal slowness and effort. His back was also rigid, and at times it became markedly extended. The lower extremities were not at all affected. It seems that the nervous disturbances limited themselves to the upper half of the body. Examination of the abdomen revealed a spleen whose hard, even edge reached two finger breadths below the costal margin on deep inspiration. The liver was not palpable and there was definitely no ascites.

The patient's nutritional condition was fairly good; certainly surprising for one who had been afflicted with long-standing visceral disease. Mentally, contrary to first impression, the child was quite normal. There was no impairment of memory. There was no involvement of the extra-ocular muscles. The pupils were normal in conformation and reaction. Hearing,

sight and smell were apparently all normal. There was no nystagmus, nor was there any evidence of cerebellar disturbance in the gait, which, though uncertain, was about what one would expect in an individual who is quite weak.

The red cells now numbered 3,145,000, the leukocytes 9,560 and the eosinophils 3 per cent. Examination of urine showed nothing of interest. The spinal fluid was normal and the blood Wassermann reaction was negative. Coagulation time and bleeding time were within normal limits. A diagnosis of chronic encephalitis and Banti's disease was made. The consultant in neurology at first concurred in the diagnosis of chronic encephalitis but soon afterward made the diagnosis of Wilson's disease. The patient was transferred to a neurology service with this diagnosis and after several weeks of suffering as a result of the tetanic contractions of the muscles of the upper extremities and the back, he became progressively weaker and died, March 10. An autopsy was done.

AUTOPSY

The pathologic observations were typical of hepatolenticular degeneration, of which Wilson's disease is one form. The liver was an excellent example of advanced atrophic cirrhosis. The spleen was greatly enlarged, was slate blue, and its capsule was smooth and glistening. On section, the splenic pulp was a deep purplish red and very friable. When the skull was opened, considerable edema was found. The ventricles were found to contain a slightly increased amount of fluid. Sections through the columni and lenticular regions of the brain showed a marked increase in glial cells and fat droplet cells. The only other abnormal condition was an acute congestion of the pulmonary alveoli.

COMMENT

In most cases reported heretofore, symptoms of disease of the liver have not been marked, the advanced cirrhosis found at autopsy being quite unexpected. There is usually a marked disproportion between the hepatic symptoms during life and the hepatic changes revealed at autopsy. The case here reported apparently differs from most others in that the hepatic disease had produced symptoms and signs unmistakably referable to the liver for four years before the nervous disturbance began to draw to itself a great deal of attention. Furthermore, in this case death occurred a relatively short time after the appearance of the nervous disturbance. This case seems to justify the opinion of Barnes and Hurst that the cirrhosis of the liver is the result of repeated attacks of hepatitis rather than a slowly progressive degenerative process; certainly this patient had several exacerbations and remissions of the hepatic disease. The "chills" described in the histories of the case probably were spastic rigors. The eosinophilia seemed to be constant throughout the history of the case. No cause for it could be determined, and it was therefore concluded that it probably depended on the main disease process itself. The patient showed no corneal pigmentation, but no specialized methods for discovering this phenomenon were employed. The gastric hemorrhage was undoubtedly a result of the cirrhosis of the liver, but whether the hemorrhagic diathesis that developed later in the disease was also a part of the hepatic purpura or whether there may at times be an element of splenic purpura associated with the disease is a matter of conjecture. It would seem, however, that the hepatic disturbance was sufficient to explain the bleeding gums.

The etiology of this disease is unknown. Nothing was discovered in the study of this case that excited as much as a suspicion.

Attempts are being made at the present time to have complete studies carried out on the surviving children of the patient's family.

SUMMARY

In a case of hepatolenticular degeneration, the hepatic portion of the clinical picture predominated, whereas in most cases reported the nervous manifestations have been the more pronounced.

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THE EXCRETION OF NONPROTEIN NITROGEN SUBSTANCES BY THE INTESTINE

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The excretion of water by the intestine has long been recognized as a useful therapeutic procedure, but little emphasis has been placed on the substances excreted with the liquid. The action of the saline cathartics is generally regarded as being due to the large amount of liquid that is abstracted from the blood through the intestinal mucosa by the hypertonic solution. Likewise, the more powerful purgatives are believed to cause excretion of a large amount of liquid which resembles the content of the small intestine and, as Cushny[1] states, these substances "have been hurried through the bowel too rapidly to permit of their being taken up by the epithelium."

The quantity of liquid that is normally poured into the small intestine every day by the various glands and organs of digestion and usually reabsorbed amounts to several liters, according to Meyer and Gottlieb,[2] and the composition of the diarrheic stools, according to Hay,[3] approaches very closely that of normal intestinal juice as to organic and inorganic solids. The liquid feces produced as a result of saline cathartics has a content of nitrogen and chlorine approximately equal to that of the succus entericus, according to Meyer and Gottlieb.[4]

In the treatment of anasarca, ascites and dropsy in which elimination through the bowel is generally desired, the quantity of water removed in the stools is quite commonly believed to be of prime importance, although Christian [5] minimizes the value of this method of treating cardiac edema. Few authors mention the composition of the fluid thus excreted, but von Noorden and Ritter [6] found an increased percentage of nitrogen in the feces of patients with chronic nephritis, and in the diarrheic stools of uremia the former author [7] noted an increased amount of nitrogen, a considerable portion of which was ammonium salts.

It has been known for a long time that an appreciable amount of urea can be eliminated in the sweat, saliva and gastric juice of patients with uremia and anuria following urinary obstruction. This "vicarious elimination" has been stressed by Myers [8] in long standing

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anuria, and this observation has been confirmed by McEnery, Meyer and Ivy [9] in experiments on gastric secretion in experimental nephritis. Likewise, Polland, Roberts and Bloomfield [10] were able to determine quantitatively the amount of nitrogen in gastric juice after histamine stimulation, and in similar studies Martin [11] established normal values for the various nonprotein nitrogen constituents of gastric juice and noted increased values in gastric carcinoma and nephritis. Steinitz [12] also found that nonprotein nitrogen can be eliminated by the stomach and duodenum and that the concentration in the gastric juice and duodenal contents may be several times that in the blood in cases of renal insufficiency. In comparing the concentration of rest nitrogen in the saliva and duodenal juice of normal persons with that of patients with uremia, Scherk [13] observed a marked increase in the latter condition, but there was little difference in the nitrogen eliminated in the feces of the two groups. Ascoli and Licci,[14] however, demonstrated that the stools of patients with a uremic diarrhea may contain from 5 to 6 Gm. of nitrogen daily. Brown [15] states that the amount of nitrogen thus eliminated in uremia may reach 8 Gm. daily. The similar eliminatory function of the large intestine as to dextrose, sodium chloride and urea has been pointed out by Grigaut and Richet,[16] who state that approximately one third of the urea eliminated after being intravenously injected as a hypertonic solution was excreted by the bowel. These authors state that Claude Bernard was the first to call attention to this function of the bowel after ligation of the ureters in dogs. In comparing the diarrheic stools of patients suffering from pellagra with those of normal controls, Myers and Fine [17] found that 15 per cent of the total output of nitrogen (urine and feces) was eliminated in the feces of the patients with diarrhea, whereas only 10 per cent of the total was excreted in the stools of the controls.

That the question of excretion of nitrogen by the intestine is controversial is well illustrated by the conflicting statements by Peters and Van Slyke [18] in their discussion of this subject. These authors express the opinion that "stool nitrogen represents not unabsorbed nitrogen but rather nitrogenous products excreted or secreted by the bowel," and "in nephritis, even with high blood nonprotein nitrogen, the stool nitrogen remains normal unless diarrhea develops"; but they state further (p. 312): "It is doubtful whether measures aimed to promote elimination of fluid by extrarenal channels are of any benefit. . . . Nitrogen excreted by the bowel is not to be considered in the usual sense as metabolic nitrogen." Other than these reports, no mention is found in the literature regarding the quantitative excretion of nonprotein nitrogen substances in the feces.

This study was carried out for the purpose of demonstrating the quantitative elimination of the various nonprotein nitrogen metabolites and sugar in the stools of patients afflicted with various diseases and under treatment in the hospital. The method consisted in the administration by mouth of one ounce of magnesium sulphate in hot water on a fasting stomach and the collection of the liquid feces by rectal tube or in the bed pan when free from urine. Elaterin and compound powder of jalap were also used as the cathartics in some instances. The liquid stool thus obtained was centrifugated at high speed for several minutes to remove any solid material and the supernatant liquid used for analysis.

The urea and ammonia nitrogen was determined by aeration both before and after digestion with urease

Analysis of Specimens from Sixteen Patients with Various Diseases

	Urea Nitrogen			Ammonia Nitrogen			Nonprotein Nitrogen			Uric Acid			Creatinine			Sugar	Blood Chemistry			
	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Average, per Cent	Urea Nitrogen	Nonprotein Nitrogen	Uric Acid	Creatinine
Uremia, 3 patients	14.56	1.42	5.45	65.2	6.16	43.3	99.5	22.2	67.3	3.72	1.69	2.72	7.95	1.80	3.59	.....	77.6	102.1	9.40	3.90
	23.12	10.46	18.70	96.3	42.4	65.1	116.7	60.4	97.5	5.00	3.32	4.33	22.5	13.9	17.2	0.013	133.6	183.1	8.80	12.8
	16.70	4.57	7.14	112.4	19.5	74.9	110.0	55.2	90.7	7.53	6.05	7.00	21.4	12.5	16.1	.....	93.6	142.5	8.39	5.35
Average	.....	....	10.43	.....	....	61.1	.....	....	85.2	....	....	4.68	....	....	12.3	.....	101.6	142.6	8.86	7.35
Chronic nephritis, 4 patients	19.62	7.94	13.25	73.1	22.8	47.9	102.1	25.2	49.9	4.1	2.7	3.0	2.60	1.29	1.89	.....	17.9	38.7	3.12	1.29
	11.48	1.96	5.52	59.7	11.4	36.2	75.7	10.4	46.5	4.2	1.5	2.5	4.32	1.09	2.90	.....	68.3	86.7	7.08	3.66
	10.08	1.98	5.56	160.0	28.1	101.1	348.0	82.5	205.7	3.5	2.8	3.1	3.30	2.10	2.75	0.020	19.9	39.6	3.16	1.40
	.....	....	5.24	.....	....	14.4	.....	....	28.6	...	...	2.9	....	....	2.50	.....	19.1	39.9	4.42	1.61
Average	.....	....	7.39	.....	....	49.9	.....	....	82.9	...	...	2.88	....	....	2.51	.....	31.3	51.2	4.45	1.99
Chronic myocarditis, 6 patients	4.20	3.05	3.55	18.0	14.3	16.4	41.7	30.5	36.1	....	....	3.50	....	....	2.10	.....	9.1	27.6	3.73	1.35
	4.25	2.01	3.13	18.5	18.0	18.4	.....	....	35.2	....	....	3.60	....	....	2.20	.....	42.4	62.4	6.68	1.67
	9.85	1.12	4.22	28.4	2.1	16.1	57.9	49.8	53.8	4.69	1.72	3.70	1.70	1.50	1.59	.....	19.1	36.9	4.81	1.37
	17.33	5.74	10.55	22.2	4.3	12.6	72.0	27.9	46.4	4.50	3.20	3.80	2.61	1.49	2.20	.....	13.5	31.5	3.76	1.55
	7.38	1.36	4.62	54.9	3.5	22.3	60.3	15.7	41.8	7.30	1.90	3.80	3.30	2.20	2.60	.....	20.3	41.5	3.68	1.74
	.....	....	2.44	.....	....	6.8	.....	....	15.8	....	....	3.80	....	....	2.30	.....	14.7	32.4	4.94	1.86
Average	.....	....	4.75	.....	....	23.15	.....	....	38.2	....	....	3.7	....	....	2.17	.....	19.8	38.7	4.60	1.59
Normal kidney function, 3 patients	.....	....	6.02	.....	....	18.0	.....	....	33.6	....	....	2.8	....	....	2.03	0.025	12.5	28.5	2.51	1.45
	.....	....	2.43	.....	....	6.8	.....	....	12.9	....	....	1.7	....	....	1.51	0.031	9.8	27.1	2.30	1.29
	.....	....	3.64	.....	....	16.6	.....	....	28.3	....	....	1.8	....	....	1.30	0.026	10.5	26.9	2.40	1.40
Average	6.02	2.43	4.03	.....	....	13.8	.....	....	24.93	....	....	2.1	....	....	1.61	0.029	10.9	27.52	2.40	1.38

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solution, as in Van Slyke and Cullen's[19] modification of Marshall's urease method.

The other nonprotein nitrogen constituents were determined on a filtrate prepared by a modification of the Folin-Wu[20] precipitation, in which an increased amount, from one and one-half to two volumes of the two-thirds normal sulphuric acid, was added to obtain maximum precipitation and the mixture allowed to remain in the icebox for an hour or two to insure a clear filtrate. In a large majority of instances a satisfactory filtrate was obtained, but occasionally when the feces contained a considerable amount of magnesium sulphate a turbidity interfered with the estimation of the nonprotein nitrogen, and the result was not recorded. The feces obtained following the use of elaterin was satisfactory in such instances and the constituents were similar in amount. The Folin-Wu methods generally were followed for the various substances in the filtrate, and for uric acid the silver lactate precipitation procedure was employed. The analyses for sugar were completed within an hour after the specimen was obtained, and the filtration was carried out in a refrigerator to lessen glycolysis as much as possible.

All analyses made on eighty-eight specimens of liquid feces obtained from sixteen patients having various diseases and the averaged results for each patient are summarized in the accompanying table.

The sixteen patients are classified into four groups according to the disease that was predominant. For the three patients with uremia, the averaged values for urea nitrogen were as follows: maximum, 18.70 mg. per hundred cubic centimeters; minimum, 5.45 mg., and the average of the group, 10.43 mg. For ammonia nitrogen the corresponding figures were 99.3, 6.16 and 61.1 mg.; for nonprotein nitrogen, 116.7, 22.2 and 85.2 mg.; for uric acid, 7.0, 1.69 and 4.68 mg.; for creatinine, 22.5, 1.80 and 12.3.

The four chief nonprotein nitrogen containing substances of the blood are also recorded in the table for comparison, and the averages are: blood urea nitrogen, 101.6 mg. per hundred cubic centimeters; nonprotein nitrogen, 142.6 mg.; uric acid, 8.86, and creatinine, 7.35 mg. It can be seen readily that whereas the amount of urea in the liquid feces of these patients is much less than the amount in the blood, the amounts of nonprotein nitrogen and uric acid compare favorably and the amount of creatinine in the stool is actually in excess of that in the blood. Perhaps the low values for urea may be explained by the ease with which intestinal bacteria convert urea into ammonia, and it will be noted that more than 70 per cent of the nonprotein nitrogen of the liquid feces is ammonia.

The group of patients who had chronic nephritis without uremia had values as follows: Urea nitrogen: maximum, 19.62 mg. per hundred cubic centimeters; minimum, 1.96 mg.; average, 7.39 mg. Ammonia nitrogen: maximum, 160 mg.; minimum, 11.40 mg.; average, 49.9 mg. Nonprotein nitrogen: maximum, 348.0 mg.; minimum, 10.4 mg.; average, 82.9 mg. Uric acid: maximum, 4.2 mg.; minimum, 1.5 mg.; average, 2.88 mg. Creatinine: maximum, 4.32 mg.; minimum, 1.09 mg; average, 2.51 mg. The average values of the four constituents of the blood of these patients were: urea nitrogen, 31.3 mg. per hundred cubic centimeters; nonprotein nitrogen, 51.2 mg.; uric acid, 4.45 mg., and creatinine, 1.99 mg.

There were six patients with chronic heart disease; i. e., chronic myocarditis alone or in association with chronic valvular disease as the predominant condition. The values in the liquid stools of these patients were: Urea nitrogen: maximum, 17.33 mg. per hundred cubic centimeters; minimum, 1.12 mg.; average, 4.75 mg. Ammonia nitrogen: maximum, 54.9 mg.; minimum, 3.45 mg.; average, 23.15 mg. Nonprotein nitrogen: maximum, 72.0 mg.; minimum, 15.7 mg.; average, 38.2 mg. Uric acid: maximum, 7.3 mg.; minimum, 1.72 mg.; average, 3.7 mg. Creatinine: maximum, 3.3 mg.; minimum, 1.49 mg.; average, 2.17 mg. In the blood, the urea nitrogen averaged 19.8 mg. per hundred cubic centimeters; the nonprotein nitrogen, 38.7 mg.; the uric acid, 4.6 mg., and the creatinine, 1.59 mg.

The averages for the group of three patients, two with diabetes and one with cirrhosis of the liver but with normal kidney function, were: For the feces: urea nitrogen, 4.03 mg. per hundred cubic centimeters; ammonia nitrogen, 13.8 mg.; nonprotein nitrogen, 24.93 mg.; uric acid, 2.1 mg.; and creatinine, 1.61 mg. For the blood: urea nitrogen, 10.9 mg. per hundred cubic centimeters; nonprotein nitrogen, 27.5 mg.; uric acid, 2.40 mg., and creatinine, 1.38 mg.

The average percentage excretion of sugar in the liquid feces of the two patients with diabetes was 0.026, whereas that in three patients (one with nephritis, one with cirrhosis of the liver and one with uremia) was 0.019.

COMMENT

From a comparison of these averages it can be observed that there is a considerable increase in the concentration of the nonprotein nitrogen metabolites eliminated in the liquid feces of the patients with uremia and in those having chronic nephritis without uremia; in chronic myocarditis there is a moderate increase of these substances over that in the normal group. Roughly, these values parallel the concentration of the same substances in the blood with the exception of ammonia, which is probably largely formed from the urea. Of the various substances, creatinine exhibits the most marked increase in the patients with uremia. Since in many instances several hundred cubic centimeters of liquid fecal material was passed daily, it can thus be seen that an appreciable amount of nonprotein nitrogen is excreted in the stools. In a few specimens the concentration of nitrogen in the stool was greater than in the blood, but in the majority of analyses it was less, as seen in the averages. These results support the idea of "vicarious elimination" when there is a demand created by a "piling up" of the nitrogenous metabolites in the blood. Also from the results, experimental evidence is presented which supports the clinical observations of the value of the saline cathartics and hydragogues in the treatment of chronic nephritis and chronic myocarditis.

There was sufficient sugar present in the stools of five patients to be measured by Folin's method, and the concentration was slightly greater in the two patients with diabetes, although neither of these had a blood sugar above 0.20 per cent.

CONCLUSIONS

1. Appreciable amounts of the nonprotein nitrogen metabolites are eliminated in the stools by purgation.

2. The higher the concentration of nonprotein nitrogen in the blood, the higher is the concentration in the liquid feces.

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3. The therapeutic efficacy of vigorous catharsis and purging is supported by experimental evidence.

4. An appreciable amount of dextrose can be detected in the feces.

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WOHLFAHRTIA MYIASIS IN NORTH DAKOTA

REPORT OF TWO CASES

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The genus Wohlfahrtia belongs to the dipterous family Sarcophagidae, most of whose larvae live in decaying flesh. The larvae of Wohlfahrtia, however, appear to breed only in living tissues. W. magnifica Schiner has been found in wounds of man and animals in Europe and Africa. Prof. E. M. Walker [1] of the University of Toronto reported several cases in which the larvae of Wohlfahrtia vigil (Walker) burrowed under the skin of infants: 1. A two weeks old infant had twelve lesions on the front of the neck and arms and also on the palms and chest. 2. An infant, aged 8 weeks, had fourteen lesions on the front of the neck and chest and on the anterior surface of the arms. 3. A 5 months old infant had lesions on the left side of the neck under the angle of the jaw, and one on the left cheek (this case was also reported by Brady [2]). 4. Twelve or fourteen lesions (probably caused by this species) were found on the front and right side of the neck and on the anterior surface of the right forearm of an infant aged 3 weeks.

Felt [3] has reported living maggots provisionally identified as W. vigil from a conjunctival cyst of an adult. Sanders [4] recorded Wohlfahrtia vigil myiasis involving the neck of a 3 months old infant. Knowles [5] reported the case of a 9 months old infant involving the neck and arm. Chown's [6] case of a 3 months old infant involving the neck, ear, chest and popliteal space was diagnosed clinically as Wohlfahrtia vigil myiasis.

Washburn [7] has recorded small larvae of Gastrophilus epilepsalis French under the skin of an infant; Dr. Aldrich thinks that they were probably W. vigil. There is, however, a record by Miller [8] from Casselton, N. D., of a case of "creeping eruption" of the left forearm due to Gastrophilus hemorrhoidalis L.

Shannon [9] has reported finding a rabbit in which death resulted from infection by a large number of maggots of vigil. Mr. C. T. Greene added the following note to Shannon's: "Two muscid larvae received from the Bureau of Animal Industry for identification and which proved to be a species of Wohlfahrtia, either vigil or meigenii, were taken at Dunkirk, Mont., Sept. 8, 1922, from the back of an Airedale puppy six days' old." Johannsen [10] found a larva in a rabbit which was probably not more than a week old. Recently Dr. Aldrich has identified an adult reared from a larva found under the skin of a young mink at a fur farm, Austin, Minn.

Dr. Aldrich writes in a letter: "I collected the adult of the species at Lake Metigoshe, Turtle Mts., North Dakota. The species ranges from Nova Scotia to North Dakota, or rarely farther, but west of the Rocky Mountains it seems to be replaced by a form in which the shining black spots on the abdomen are much smaller, most of the surface being occupied by the gray pollinose portion. This has been called Wohlfahrtia meigenii Schiner, agreeing with the European species, but I suspect that it is only a color form of vigil, which is the older name."

Mr. Neal Weber has recently (June 14, 1931) collected a damaged specimen of Wohlfahrtia meigenii Schiner (determined by Dr. Aldrich) at Towner, N. D. It was being dragged to their nest by workers of the thatching ant, Formica rufa obscuripes Forel.

REPORT OF CASES

CASE 1.—June 18, 1931, one of us (G. D. G.) was called to attend an infant aged 4 months, living on a farm near Grand Forks. A hard, red mass was noted just above the base of the penis and slightly to the right of the midpubic region. That evening a small "punched-out hole" appeared in the center of this area. The following morning the area was larger and there was considerable indurated swelling involving the pubic area of the abdomen and the entire penis. On the evening of the second day a second "punched-out hole" was noted on the penis just distal to the base. It was filled with a small black plug. The condition appeared to be a typical lymphangitis and the plug was thought to be necrotic. Hot packs were prescribed. June 22, a larva was found on the dressing and a bloody discharge exuded from the upper wound. Chloroform irrigations and mercurochrome instillations were used and hot packs were continued. The condition cleared rapidly.

June 22, the larva was sent to the Biological Laboratory of the University of North Dakota, where it was placed on dry soil in a small petri dish, which was kept at room temperature. After wandering for some time on and in the soil, it finally became quiet. During the night of June 24-25 it pupated. The imago appeared on July 7; it was noticed at 4:45 p. m., presumably a short time after eclosion, for the wings had scarcely begun to expand. After thirty minutes the wings were fully expanded. The fly and its puparium were sent to the United States National Museum, where they were identified by Dr. J. M. Aldrich as Wohlfahrtia vigil (Walker).

CASE 2.—June 19, 1931, about 9 a. m., a woman living in Fargo telephoned that her 8 months old baby girl had a "sore eye." From her description over the telephone we thought that it was probably conjunctivitis and suggested boric acid solution and mild silver protein. About noon the same day she requested that we call and examine the eye, as it seemed to be getting worse.

She stated that in the morning she had first noticed two small areas on the upper lid like a stye—small, grayish white elevations near the free margin of the lid. Redness and swelling had increased rapidly during the forenoon. Little weight was placed

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2. Brady, M. J.: Cutaneous Myiasis, Arch. Pediat. **40**: 638-640 (Sept.) 1923.
3. Felt, E. P.: New York State Mus. Bull. 260; pp. 46-54, 1925.
4. Sanders, H. C., Jr.: Myiasis Dermatosa, New England J. Med. **199**: 38 (July 5) 1928.
5. Knowles, T. R.: Cutaneous Myiasis, Colorado Med. **22**: 309-310 (Sept.) 1925.
6. Chown, G.: Report of a Case of Cutaneous Myiasis in an Infant: Wohlfahrtia Vigil (Walker) Infection, Canad. M. A. J. **14**: 967-968 (Oct.) 1924.
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8. Miller, H. W.: Creeping Eruption — Report of a Case, Journal-Lancet **49**: 567-568 (Dec. 15) 1929.
9. Shannon, R. C.: Nonhuman Host Records of Wohlfahrtia (Diptera), Proc. Ent. Soc. Washington **25**: 142, 1923.
10. Johannsen, O. A.: Wohlfahrtia Vigil as a Parasite on Rabbits, J. Parasitology **13**: 156 (Dec.) 1926.

on her statement that movement under the skin had been noted. The same treatment was continued. That evening she again reported that the eye appeared much worse and was entirely closed.

The condition did not seem to cause the child any great discomfort. She slept well that night and showed no toxic or systemic manifestations. The next morning the mother found matter and blood smeared about as though the skin had perforated and some drainage had taken place, and at noon she reported that a small worm had emerged from one of the lesions.

On examination we found that the edema had progressed to the point at which the palpebral fissure was completely closed. The globe appeared normal in every way. The conjunctival sac was congested but did not contain pus.

The edema was limited to the upper lid and tear sac areas, suggesting an acute dacryocystitis with hordeolum of the upper lid.

The lesions had localized, assuming a pustular appearance. The centers were translucent and pale yellow. The lesion on the upper lid was about 4 mm. from the margin of the lid, centrally located, and the other squarely over the tear sac area.

We found both pustules broken, and larvae were plainly in view. With fine forceps we removed two larvae from the upper lid and one from the lesion over the tear sac area. They were very motile, white and apparently 6 or 8 mm. in length. The heads appeared considerably darker. The specimens were brought to Prof. J. A. Munro, state entomologist at North Dakota State College, Fargo, N. D. Professor Munro placed the maggots on fresh liver and reared them almost to maturity. Being called away, he forwarded them to Dr. F. C. Bishop, principal entomologist in charge of insects affecting man and animals, Bureau of Entomology, Washington, D. C., who sent the following report:

"These prove to be Wohlfahrtia vigil. This species, as you probably know, has been taken from pustules on the faces, necks and shoulders of children on several occasions. It has also been reared from cottontail rabbits. It appears to be the Northern species and probably has a considerable number of hosts."

Improvement was rapid. By night the swelling had so decreased that the eye was half open, and by the following morning it appeared almost normal.

COMMENT

A search of the literature has failed to reveal another identified case of Wohlfahrtia vigil myiasis involving the adnexa of the eye. It is probable, however, that the larvae may develop on any exposed area of skin on which eggs are deposited by the fly.

The reported cases in man have all been in infants or young children. The importance of protection to children sleeping outdoors is obvious. Knowles [5] suggests the possibility of the larvae as disease carriers, particularly in connection with the epidemiology of poliomyelitis.

Our cases were both in infants and occurred at approximately the same time, June 18 and 19, 1931. The case reported by Knowles occurred June 6, 1923. Chown's case occurred June 27, 1924. Two of Walker's cases occurred in June, 1919, and another in June, 1921. Sanders' case came under his care in June, 1922. It is interesting to note that nearly all the reported cases have occurred in June. The natural inference is that the species Wohlfahrtia vigil is most liable to select the human being as its host during that month. This observation we believe to be of sufficient importance to pass on to mothers for their guidance in the protection of their children from flies during the month of June.

SUMMARY

1. Infection of the human being with larvae of Wohlfahrtia vigil, although rare, occurs in North Dakota.

2. Reported cases indicate that it is mainly infants or young children that are infected.

3. Prevention may be attained by adequately protecting the child during its outdoor sleeping hours, especially during the month of June.

BILATERAL CERVICAL CHORDOTOMY

FOR RELIEF OF PAIN IN CHRONIC INFECTIOUS ARTHRITIS

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High cervical chordotomy has been performed for the past few years following Foerster's demonstration that pain and temperature fibers cross over immediately or at most ascend one segment before crossing over to form the spinothalamic tract. Foerster [1] advocated section of the spinothalamic tract as high as the second cervical segment and was the first to produce a unilateral analgesia nearly to that dermatome. This has proved to be an important contribution to Spiller's operation.

Bilateral chordotomy in the upper cervical segments should not be performed because of the danger of respiratory paralysis. The phrenic nerves arise chiefly from cells in the fourth cervical segment. The exact location of the tracts descending to these cell bodies is unknown. Theoretically, at least, edema following section of the anterolateral tracts might involve these descending fibers or the phrenic cells in the anterior horns as well as the motor tracts of the intercostal muscles, resulting in respiratory failure.

In several communications Foerster [2] has warned against bilateral, high cervical chordotomy. He has, however, performed it in one case, but only following failure of a unilateral section to relieve symptoms. In this case Foerster felt that the first operation might have in some way protected the tracts from edema subsequent to the second, necessarily more radical, procedure.

The case that we present called for control of pain in both lower extremities and, in addition, the right arm and shoulder. The pain was abolished without risk of respiratory paralysis by sectioning the tract at the third cervical segment on one side and approximately the eighth cervical segment on the other. This produced the greatest area of analgesia in any patient of the series of seventy on whom anterolateral chordotomy has been performed in this clinic. Foerster's case is the only one in the literature we have found in which a greater area of analgesia has been obtained.

History.—R. P., a man, aged 20, admitted to the University Hospital, complained of severe pain, swelling and limitation of motion of the joints. The onset three years before was gradual and at first involved only the hips and lower part of the back. The patient was able to be about but suffered much discomfort. About a year later, he experienced pain and swelling in the right knee and noticed that the joint was becoming stiff. Shortly afterward, the left knee became involved,

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1. Foerster, O., and Gagle, O.: Die Vorderseitenstrangdurchschneidung beim Menschen, Ztschr. f. d. ges. Neurol. u. Psychiat. **138**: 1-92, 1932.

2. Foerster, O.: Personal communications to the authors.

and this was followed by involvement of the ankles, the right shoulder and the right temporomandibular joint. He was forced to take to his bed, where he remained until the present time. The pain was so severe that he dreaded the slightest movement. His appetite was poor; he lost weight rapidly and became severely emaciated. His past illnesses consisted of the usual diseases of childhood. He denied any venereal infection, and he had never had any infections of the upper

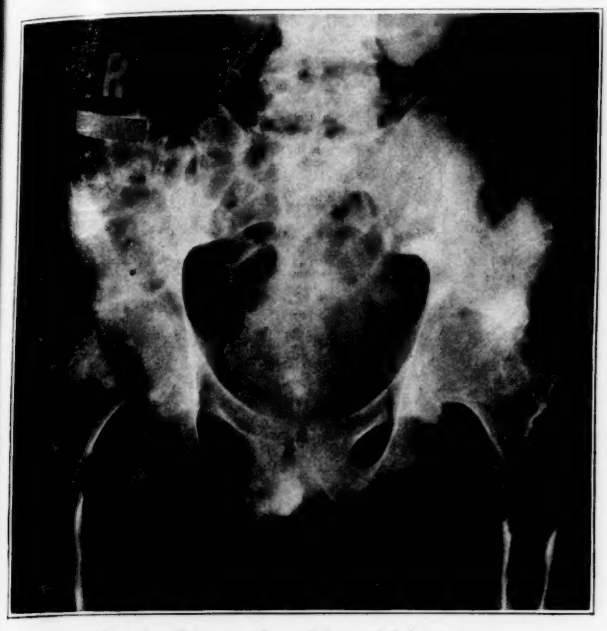

Fig. 1.—Osteoporosis and loss of joint space.

respiratory tract except for an occasional cold. His health had always been of the best until the onset of the present illness.

Examination.—The patient was severely emaciated and was seen lying quiet in bed. There were no stigmas of deviation; the patient was intelligent and cooperated well. The pupils were equal and regular, and reacted to light and in accommodation. The teeth were in good condition and the tonsils had been removed. Hearing was normal and there was no tenderness over the mastoid region. There was no evidence of cervical adenopathy. Careful examination of the lungs revealed nothing abnormal. The heart was of normal size

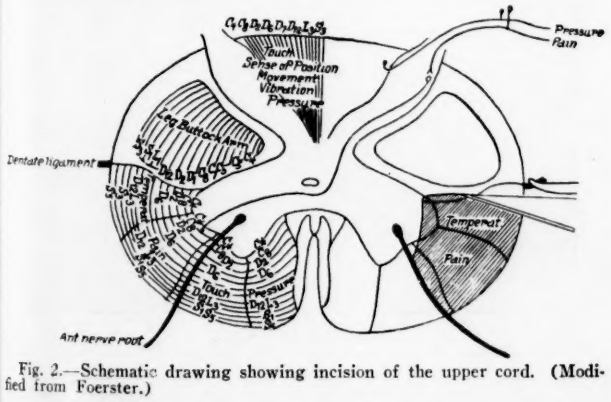

Fig. 2.—Schematic drawing showing incision of the upper cord. (Modified from Foerster.)

with the apex beat in the fifth interspace at the midclavicular line. The sounds were clear, the rhythm regular, and there were no murmurs. Motion of the right shoulder caused pain. There was marked limitation of motion of both hips, almost to the point of ankylosis, and also considerable limitation of motion in both knees. Attempts at passive motion of these joints caused excruciating pain. Both knee joints were also somewhat enlarged. The patella was not movable on the left but freely movable on the right. The serum calcium was 11.5 mg. per hundred cubic centimeters, the inorganic phosphates 4.0.

Roentgenograms demonstrated a slight irregularity in the superior anterior margins of the body of the sixth cervical vertebra. There was marked irregularity and slight increase in density about the sacro-iliac joints. There was also a slight increase in bone production. The bones of the pelvis showed an osteoporosis. There was a generalized loss of joint space of both hips and some irregularity of the heads of both femurs (fig. 1). The distal ends of the femurs and the upper ends of the tibias also showed a marked osteoporosis. There was a loss of joint space of both knees.

Operation.—Five weeks after admission, a bilateral lumbar sympathectomy and ganglionectomy was done. Two months following operation, there was little if any improvement in the joints of the lower extremities. Since the pain continued as severe as ever, chordotomy was advisable.

Under tribrom-ethanol anesthesia, a cervical laminectomy was performed by one of us (S. S. A.), the spines and laminae of the second to the seventh cervical vertebrae being removed. The posterior roots of the fourth and fifth nerves on the right side and of the fourth nerve on the left were divided. The cord was then easily rotated by grasping the dentate ligament.

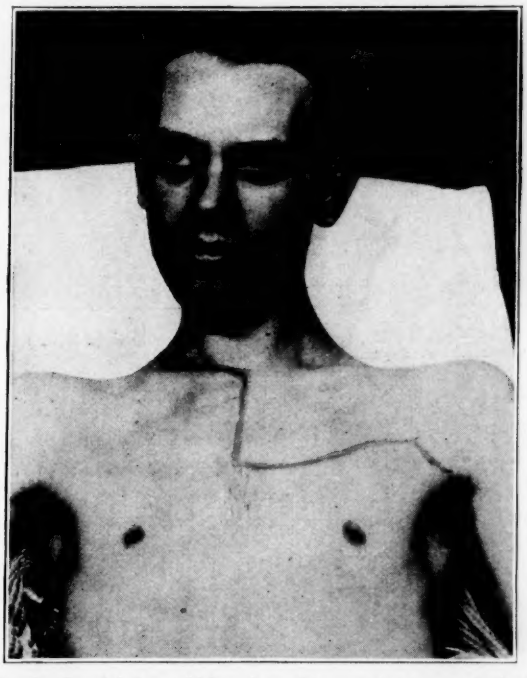

Fig. 3.—Level below which pain and temperature sense is lost.

At the third cervical segment on the left side an incision 5 mm. in depth was made into the anterolateral column of the cord, extending from the dentate ligament to the emergence of the anterior nerve root (fig. 2). On the right side a similar section of the cord was made at the eighth cervical segment, but was only 4 mm. in depth. The level of the loss of sensations of pain and temperature is shown in figure 3. No area of total anesthesia could be demonstrated.

Following operation, the patient was completely free from all pain, except at the site of the incision. An inlying catheter was placed because of urinary retention. He was soon able to be moved with no discomfort whatever. Two weeks after operation he was up in a wheel chair, the first time he had been out of bed in over a year. Physical therapy was now commenced, and he tolerated the brine bath perfectly. The bladder was functioning normally at the end of five weeks.

He was discharged three months after operation on long, double, upright braces and was walking with crutches. He occasionally complained of slight pain in the left shoulder.

SUMMARY

The extensive area of analgesia obtainable at one operation without danger of respiratory paralysis is demonstrated by this case.

MASSIVE ANAPHYLACTIC GANGRENE

ARTHUS PHENOMENON

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This form of reaction occurring in sensitized subjects has been known since Arthus [1] in 1903 reported his experiments. He attributed it to the release of antibodies which seem able to bring about all those degrees

Fig. 1.—Anaphylactic gangrene; rear view twenty-eight days after first injection, nineteen days after fifth injection.

of tissue response to insult commonly known as inflammation. Previously Koch in 1891 had described the difference in the reactions to injections of live or killed tuberculosis bacteria in normal and tuberculous animals. He pointed out that in the tuberculous a dose that is not sufficiently large to kill "an animal often produces an extensive necrosis of the skin in the neighborhood of the site of the injection." Pirquet later called this altered response of tissue in the tuberculous "allergy."

The mechanism of this spectacular result was not attributed to vasomotor spasm but to contact of antigen and antibody at the site of injection by Valy Menkin,[2] who, after numerous experiments, wrote: "I demonstrated that a non-specific acute inflammatory reaction is capable of arresting a foreign protein at the site of injection. For this reason it is probable that the fixation of antigen in Arthus' phenomenon is largely due to the acute inflammatory reaction brought about by the contact of antigen and antibody in the tissues.

"Opie [3] pointed out that it is unnecessary to assume that the tissues have undergone any essential alteration as the result of sensitization. 'Acute inflammation in response to a specific irritant, namely, Arthus' phenomenon, occurs when the antigen concerned and its antibody meet within the tissues.' This conclusion was reached by reversing the usual procedure. A normal animal received 10 cc. of horse serum intravenously. On the following day, 0.5 cc. of strong antihorse serum from an immunized rabbit was injected into the skin. Extensive inflammatory edema (the Arthus phenomenon) occurred at the site of injection, whereas none followed the injection of normal rabbit serum. Opie viewed the anaphylactic inflammation in which the antigen is fixed at the point of entry as an apparent paradox between susceptibility to injury and the resistance of immunity. With the anaphylactic inflammation the vital organs are protected at the expense of local injury.

"In a recent review, Nordmann [4] criticized Opie's interpretation of the Arthus phenomenon. Nordmann maintained that ordinary inflammatory phenomena such as are experimentally produced by the simultaneous injection of two serums into a normal animal do not show the gradually increasing severity of symptoms that is the characteristic feature of the Arthus phenomenon. It is clear, however, that this gradual change in severity of symptoms in anaphylactic inflammation may be to some extent, though not entirely, correlated with the increase in precipitin during the process of immunization. Nordmann insisted that physiologic alteration plays an important rôle in the development of the Arthus phenomenon: He says 'We conclude, therefore, that the cause of the final necrosis following the later injections in the Arthus experiment is due to the ability of the arteries to become accustomed to the serum and that in consequence of this adaptation they are less and less altered by additional injections of the antigen.' Although it is perfectly natural that physiologic changes should accompany the anaphylactic inflammation, it is doubtful whether this author has demonstrated that the particular changes in the arteries influence the development of the anaphylactic inflammatory reaction. The studies of Opie indicate that this reaction is brought about by the contact of antigen and antibody at the site of injection. An inflammatory reaction of unusual intensity occurs and this reaction doubtless brings to the site of inflammation plasma containing more precipitin. This view is in agreement with facts recently demonstrated by myself [Menkin], namely, that foreign proteins from the circulating blood

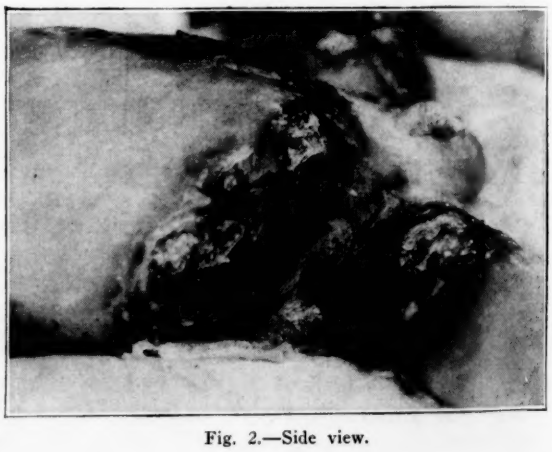

Fig. 2.—Side view.

stream accumulate in an inflamed area. The initial anaphylactic inflammation is intensified and this may account for the gradual increase in the severity of the symptoms of Arthus' phenomenon."

Two cases of gangrene [5] have been reported. Both followed the use of diphtheria antitoxin in persons sensitized by toxin-antitoxin eight and four months

1. Arthus, M. M.: Compt. rend. Soc. de biol. **55**: 817, 1903.
2. Menkin, Valy: J. Exper. Med. **52**: 201 (Aug.) 1930.
3. Opie, E. L.: Tubercle **7**: 23 (Oct.) 1925.
4. Nordmann, Martin: Physiol. Rev. **11**: 41 (Jan.) 1931.
5. Gatewood, W. E., and Baldridge, C. W.: Tissue Hypersensitiveness Following the Administration of Toxin-Antitoxin, J. A. M. A. **88**: 1068 (April 2) 1927. Tumpeer, I. H.; Matheson, Abe, and Straus, D. C.: Arthus Phenomenon in a Syphilitic Child, ibid. **96**: 1373 (April 25) 1931.

previously. The site in these cases, as in our case, was in the buttocks; but one patient also had an area in the arm.

The case reported here followed five injections of antimeningococcic serum into the buttocks nineteen months after the use of toxin-antitoxin.

REPORT OF CASE

The following history was given by the parents: A boy, aged 28 months, was delivered normally, and had jaundice during the first week of life with "spasm of the stomach" and pro-

Fig. 3.—Front view.

jectile vomiting. He was breast fed for seven months. He had mumps, sore throat and otitis media at 6 months, the cervical glands remaining enlarged. He was given cod liver oil for a "touch of rickets" and powders at 20 months for a coarse voice due to "thyroid." At 11 months he had three doses of toxin-antitoxin. He never had eczema, hives or any rash, hay fever or asthma at any time. At the age of 1 year he was vaccinated. The mother said that the child became violently nauseated and vomited at the sight or smell of such foods as stew or goulash. He was normal in behavior, mentality and weight.

The present illness began March 17, 1931, with fever, vomiting, sore throat and headache. He continued to be ill. A painful rigidity of one side of the neck with holding of the head to one side was interpreted as meningitis. April 1, without a diagnostic lumbar puncture, meningococcic serum was injected into the right buttock. The quantity was not known by the parents. April 2 the injection was repeated in the left buttock and again on April 3 in the right buttock. No anaphylactic reactions were observed. An injection in the left buttock, April 7, was followed by a blanching of the skin at the site of injection. Within an hour urticaria appeared over the entire body, with edema of the face which closed the eyes. The child became irrational and there was a fever of 103 F. This condition persisted about three days, when he became rigid for fifteen minutes and complained of severe cramps in the abdomen. On the same day, April 11, he was again given an injection in the left buttock, after which blanching and soreness were almost immediately noted. Within an hour the site became purple. On the following day, April 12, a fifth injection was given in the right buttock with a similar reaction in one hour. These areas continued increasingly purple, swollen and tender. April 13, the swelling had extended over and around the left side of the abdomen and there was fever varying from 99 to 103 F. The swelling had increased by April 14 but the patient appeared improved and asked for food. At this time several large blebs, described as being the size of a silver dollar (38 mm.), appeared over both buttocks, with purple discoloration over the right anterior thigh. Two days later the areas became dark and the swelling subsided. Four days later a bloody watery discharge appeared and the areas on the buttocks became black as contrasted to the normal skin.

It was at this time that the patient was first seen by one of us. Examination revealed gangrenous areas with discharge and sloughing in both buttocks, sides of the abdomen and thighs. There was an area of pneumonia in the right lower lung and left otitis media. There was no cervical rigidity nor sign of meningitis. The child had fever and appeared very sick. The Wassermann reaction was negative; the blood and urine were of no especial interest. No pus cavities formed, but two large masses of necrotic tissue were lifted out.

Despite antiseptics, surgical drainage and the performance of three blood transfusions, the patient became progressively weaker and died twenty-one days after admission. No autopsy was obtained.

5312 Washington Boulevard—6805 West Twenty-Second Street.

Clinical Notes, Suggestions and New Instruments

XANTHOMA DIABETICORUM: AN EARLY CASE

R. B. MORELAND, M.D., SOUTH BEND, IND.
AND
V. J. DARDINSKI, M.D., WASHINGTON, D. C.

Xanthoma diabeticorum may be described as being a rare skin disorder occurring in glycosuric or diabetic individuals, usually in adult males; the skin lesions consisting of reddish, reddish yellow or orange papules, measuring from 0.5 to 2 cc., distributed chiefly over the extensor aspects of the arms, legs and buttocks, discrete and usually in not great numbers. The skin lesions develop suddenly.

This condition was first described in 1851 by Addison and Gall. Since that time other cases have been reported and further research undertaken to clear up the subject of faulty fat metabolism and this disorder associated with it. As recently

Fig. 1.—Distribution of lesions on arm, Sept. 11, 1931.

as 1922, Moore[1] reported a typical case in a girl, aged 14 years, who died in two months. In his report he states that the disorder is rare. One year later, Major[2] reported four

1. Moore, James: Xanthoma Diabeticorum, Brit. M. J. **2**: 1176 (Dec. 16) 1922.
2. Major, R. H.: Xanthoma Diabeticorum, M. Clin. North America **7**: 1059-1064 (Jan.) 1924.

cases seen over a period of five months, indicating, of course, that the disorder in reality is not so rare.

The exact cause of the dermatosis is unknown. It occurs in association with a disturbance of fat metabolism. Fatty degeneration and cholesterol and other lipid deposits are present in many of the lesions, especially those that have existed for some time. Wile,[3] in a study of lipids in xanthoma, found

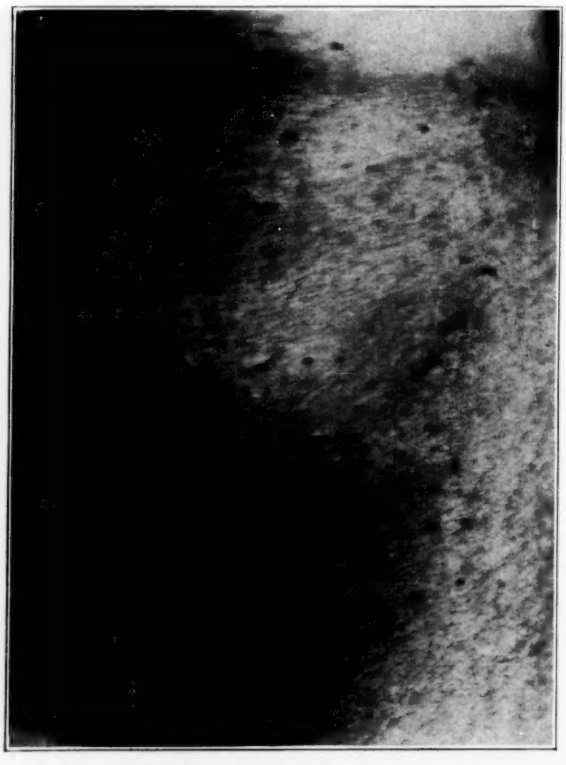

Fig. 2.—Lesions on hip, Sept. 11, 1931.

the cholesterol in normal epithelium to be from 15 to 20 per cent of the total lipids, while in xanthoma lesions it constituted only 1.5 to 2 per cent of the total lipids present: in other words, the cholesterol proportion of the total lipids in the lesions was only 10 per cent of that found in normal epithelium. Wile found a closer relationship existing between xanthomatous lesions and the total circulating lipids; as the degree of lipoidemia increased, the cutaneous lesions increased in number and size; while as the circulating lipoids decreased, the tendency was for the cutaneous lesions to regress. He also found that a high caloric diet affected the cutaneous disorder adversely, while lowering the caloric intake often resulted in improvement. Fat intake, aside from its caloric value, has no effect, since the fat intake has no relationship to the circulating lipids.

Our deductions, from the foregoing, are that the condition is due not only to faulty cholesterol metabolism and deposit but to a disorder in other fat metabolism as well, although just how is not yet worked out. Hyperglycemia is considered a contributory cause by upsetting the normal fat metabolism.

A case of xanthoma diabeticorum of twelve years' duration was reported by Azer[4] in a man, aged 45. Dietary measures, alone, caused the condition to improve greatly in four weeks, some lesions having completely disappeared. A short time later the condition completely cleared up. When the patient returned to a high caloric diet, the lesions returned.

Engman and Weiss,[5] in reporting a case in a white man, aged 23, state that several months is required before lesions involute under dietary regulation alone. In their case, treated with insulin, lesions were involuting on the seventh day; two months later the condition had cleared up completely.

The following case presents several features of interest:

REPORT OF CASE

History.—An automobile salesman, aged 24, married, seen Sept. 11, 1931, had an eruption of an erythematous nature on the penis. About two weeks before he had made a short trip into the country, during which time he had slept on the ground. He thought it was ivy poisoning and used a lotion, which, he thought, had helped it for a time. A few days later, however, from eight to ten days before he was seen, another type of eruption developed on his arms, legs and buttocks.

His past history revealed nothing of any consequence except that he had had mumps two months before, from which he had quickly recovered, without complications. He stated, however, that during the preceding six weeks his weight dropped from 225 pounds to 190 pounds (from 102 to 86 Kg.) in spite of the fact that he ate much food and drank large quantities of water. Urination, which was frequent and copious, was associated with some burning. He had no muscular weakness. His skin itched a little at times, although not distressingly. There was no history of any familial disease.

Examination.—The patient was rather obese but presented nothing abnormal aside from the skin disorder. The foreskin of the penis was swollen and erythematous; the immediately underlying scrotum was also quite irritated and had the appearance of being affected with an acute dermatitis. The ivy poisoning was then suspected to be due to glycosuria.

An entirely different type of skin disorder presented itself on the extensor surfaces of the extremities and on the buttocks. It was roughly symmetrical and consisted of papular lesions from 0.25 to 1 cm in diameter, with perhaps half that elevation. They varied from pinkish to red, appearing therefore

Fig. 3.—Section showing subepithelial fibrosis and cellular infiltration. Reduced from a photomicrograph with a magnification of 170 diameters.

inflammatory. The skin surrounding the papules seemed normal, excepting immediately adjacent to the lesion, where a little hyperemia could be seen. The lesions were discrete and totaled in all probably 100 to 120. The face, hands and feet had no lesions and none were found on the body except immediately adjacent to the shoulders and buttocks. In a few of the larger lesions, which had been first to appear, by careful inspection a faint yellowish tint could be observed. Within a

3. Wile, U. J., Eckstein, H. C., and Curtis, A. C.: Lipid Studies in Xanthoma; Further Contributions, Arch. Dermat. & Syph. **20:** 489-500 (Oct.) 1929.

4. Azer, M.: Xanthoma Diabeticorum, Brit. M. J. **1:** 665 (April 12) 1924.

5. Engman, M. F., and Weiss, R. S.: Xanthoma Diabeticorum Treated with Insulin, Arch. Dermat. & Syph. **8:** 625 (Nov.) 1923.

week's time after the first observation all the lesions had assumed this yellowish orange color, which also seemed to deepen gradually.

Laboratory Examinations.—A specimen of urine, September 11, showed 3 + sugar. As the patient stated that he had eaten little that day, this seemed all the more significant.

Fig. 4.—Section showing perivascular fibrosis and small round cell infiltration, with occasional xanthoma cells. Reduced from a photomicrograph with a magnification of 600 diameters.

September 12, the urine presented 3 + sugar. Diacetic acid was present, albumin absent. The fasting blood sugar was 312 mg. per hundred cubic centimeters. The blood serum was cloudy, indicating lipoidemia, though an actual determination was not made.

September 14, a biopsy of the lesion from the right arm was made. In the center of the specimen of skin was a firm, yellowish brown, elevated nodule projecting above the surface of the skin for about 1 mm. It measured 2.5 mm. in diameter. Section through the nodule revealed it to be brownish and 2 mm. thick, extending into the skin, but it did not appear beneath the layers in the subcutaneous tissue. The urine was free of sugar and diacetic acid.

September 16, the blood sugar was 128 mg. The urine was normal. The penile irritation had subsided. Dextrose tolerance was determined to be approximately 80 Gm.

September 29, the blood sugar was 117 mg. The urine was normal. The skin lesions were regressing.

October 5, the urine showed 2 + sugar. The diet was abandoned the day before.

October 6, the urine was normal. Regular urinalyses made later were negative for sugar.

Microscopic examination revealed the epidermis to be of normal thickness with an occasional papillary projection which seemed thicker than normal. There was a much thicker layer of keratinized epithelial cells lying on the surface than is normally seen. The cells of the epidermis did not appear to contain any excess pigment and they did not appear to be abnormal in any way. The papillary reticular layers blended together and the layer appeared to be thicker than normal. In this portion of the derma the blood vessels were of normal size but many of them were surrounded by a loose layer of fibrous tissue, scattered in which were many small mononuclear cells. Occasionally could be seen in the neighborhood of these vessels a large pale cell the nucleus of which was small and located either in the center or in the periphery. These cells were not numerous but were undoubtedly the "foam" type of cell, or xanthoma cell, that is characteristic of this lesion. The smooth muscle bundles appeared to be hypertrophied and also contained a few mononuclear cells around them.

Sudan III, pyridine, Turnbull's blue, and Mallory's ammonium sulphide and potassium ferricyanide stains failed to bring out anything that was not recognized with the hemalum and eosin stain.

The pathologic diagnosis was xanthoma diabeticorum, early lesion.

The early lesions of xanthoma diabeticorum show an increase of subepithelial connective tissue and some mononuclear infiltration but very few xanthoma cells, or "foam" cells. If one does not look for this type of cell carefully, one might easily miss the diagnosis.

Treatment and Course.—Dietetic management, after the method of Joslin, was used. Fasting periods of from one to three days promptly rendered the urine sugar free and reduced the blood sugar to normal limits. After the patient's carbohydrate tolerance had been determined, a maintenance diet was allowed.

Almost one month after treatment was instituted, abandonment of his diet for one day and overindulgence in food caused a recurrence of glycosuria. Fasting one day rendered the urine sugar free.

The only treatment given locally was a few exposures of ultraviolet rays to produce only a slight reaction, it being thought that this local stimulation and hyperemia might hasten resolution and absorption of the lesions.

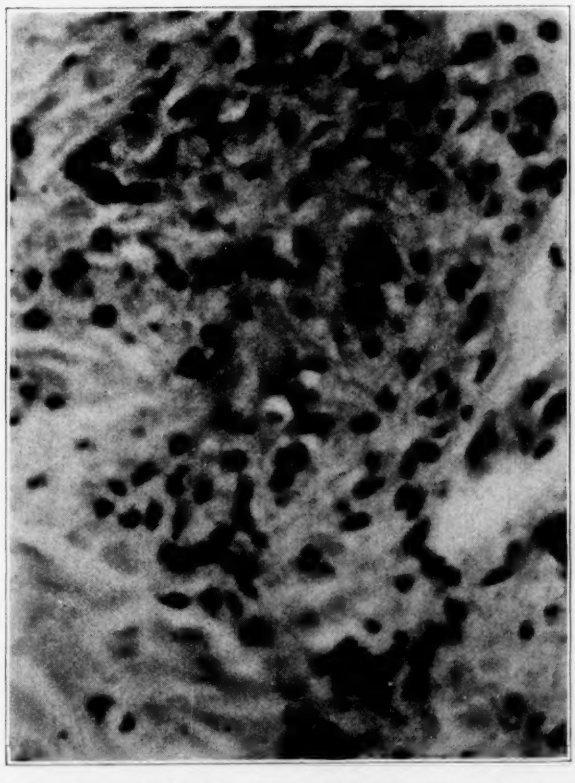

Fig. 5.—Section showing hypertrophy of smooth muscle bundles, fibrosis, numerous small mononuclear cells and occasional "foam" cells, or xanthoma cells, which are the large cells with pale-staining protoplasm and having, each, a central or peripheral nucleus. Reduced from a photomicrograph with a magnification of 765 diameters.

The skin lesions were noticeably diminishing in size seventeen days after treatment was begun and at the end of a month many lesions had gone. At the end of one and one-half months only faint traces of previous lesions could be found. There has been no recurrence and the urine has remained sugar free.

No insulin was used.

SUMMARY

The occurrence of xanthoma diabeticorum in a young adult is unusual, although a few such cases have been reported.

In an early case of this disorder, response was prompt and satisfactory to dietetic management, the skin disorder clearing up completely in one and one-half months. Insulin therapy was not necessary.

The essential pathologic characteristics of early xanthomatous lesions include subepithelial, perivascular fibrosis and round cell infiltration, hypertrophy and degeneration of the smooth muscle bundles, and the presence of a few large mononuclear cells with pale protoplasm—the "foam" cell or xanthoma cell.

318 Sherland Building.

VON RECKLINGHAUSEN'S DISEASE: CASE PRESENTING INVOLVEMENT OF LEFT EYELIDS

ARTHUR A. KNAPP, M.D., NEW YORK

Following is the report of a case of von Recklinghausen's disease, with unusual manifestations:

History.—A man was admitted to the New York City Cancer Institute, in 1925, because of a growth on the left side of the face, which had been present since birth.

The family history has no bearing on the case.

1926, to improve his appearance had to be terminated because of severe hemorrhage. However, the temporal tumor was well visualized. It was encapsulated and firmly attached within the orbit. During the past three years, both growths have increased in size, the secondary, temporal, tumor assuming a more inferior position.

Ringing in the left ear, "like a dynamo," accompanied by deafness, has been present as long as the patient can remember.

Radium therapy has been of no avail.

The patient has had measles, influenza and a tonsillectomy in childhood. His sex development is unaltered. Most of his life has been spent in institutions. During his stay, many diagnoses have been made: fibro-angioma and lymphangioma, both supported by biopsy reports, sarcoma, lymphosarcoma and teratoma of the orbit.

Examination.—The patient, an American, aged 25, is well developed and well nourished, with a markedly deformed head.

The head is large: the circumference, 61.3 cm.; the fronto-occipital diameter, 39.4 cm.; the bitemporal, 35.6 cm.

There is a massive, flabby, nontender growth occupying the whole left side of the face, encroaching somewhat onto the right side, and extending from the scalp down to and including the upper portion of the neck. This mass is covered with a thick, darkly pigmented skin and seems to hang from the skull, with lines of tension visible on the skin above it. It gives the

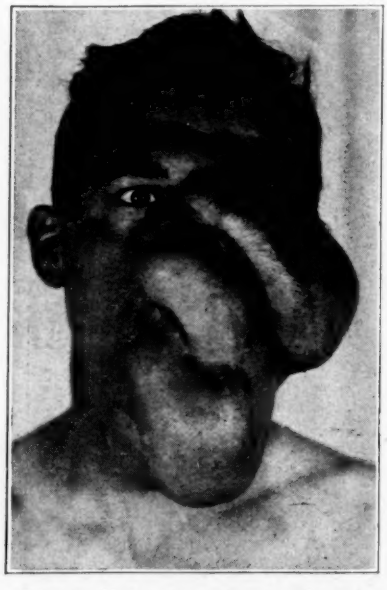

Fig. 1.—Front view of patient, showing marked elephantiasis.

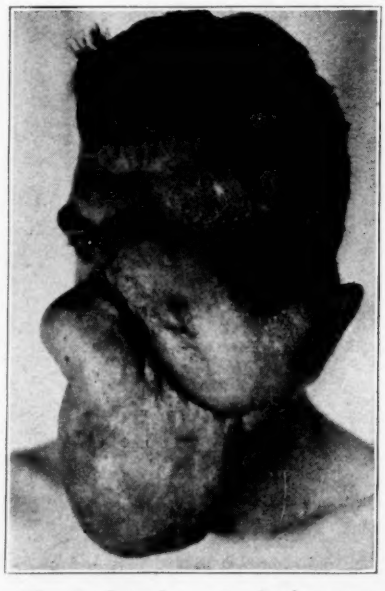

Fig. 2.—Lateral aspect, showing secondary, temporal, tumor.

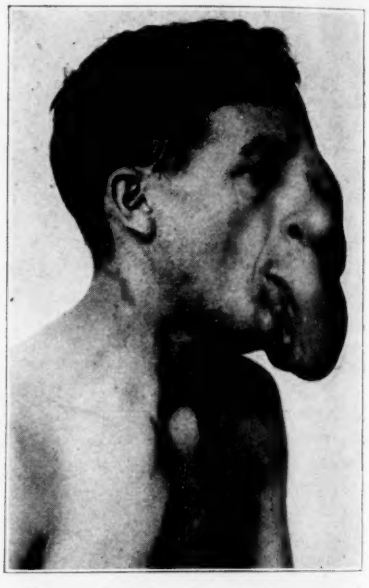

Fig. 3.—Lateral view, showing enlarged and angulated mouth.

At birth, which was normal, a "bulging" of the patient's left eye was observed. At 6 months, the child sat up, at which time his mother noticed a "drooping" of the left upper lid, which appeared to be swollen throughout. Shortly after this, the swelling involved the cheek, with the subsequent growth of the left cheek out of all proportion to the right. He walked before he was a year old. When 2 years of age, an ophthalmologist was consulted in regard to the exophthalmos. Some surgical procedure was advised. The parents were told that it was a dangerous operation. They refused to have it done. The bulging of the eye and the swelling of the face grew progressively worse. At 4½ years, his left eye was enucleated to improve his condition. When he was 5, a "big freckle" was seen on his back. Three years later he was struck in the left temple by a pitched ball. Following this trauma, a local erythematous area appeared. Not long afterward, a small "lump" was apparent at the site. The latter persisted and slowly increased in size, while the larger mass continued to grow.

In 1916, at 12 years, an attempt to remove the mass surgically proved unsuccessful. An operation, under local anesthesia, in

Read before the New York Academy of Medicine, Section on Ophthalmology, Dec. 21, 1931, and before the Harlem Medical Association, Feb. 3, 1932.

appearance of tremendous, redundant tissue, with flouncelike folds. It is divided into three lobes by healed scars of previous operations and by the crease made by the lids. The scars are continuous, forming a rough rectangle just anterior to the ear. The predominating tissue is fairly soft, giving a seedless-raisin feeling, and having normal sensation. It is chiefly responsible for the great hypertrophy of the various structures. Over the scalp there is comparatively slight increase of tissue, becoming more pronounced inferiorly.

A rather hard, oval tumor, 11.4 by 9.5 cm., is present in the temporal portion of the upper lobe of the growth. It is nodular, nontender and firmly attached posteromedially. The skin over it is freely movable. Surrounding it is a sharply outlined ridge of bone. Its posterior-inferior border is 2.4 cm. above the ear and continuous with the mastoid ridge.

The eyebrow is elongated temporo-inferiorly, bordering the upper lobe of the mass anteriorly. It is 12.1 cm. long and 2.5 cm. wide. It is not as thickly infiltrated with cilia as the right side. The left supra-orbital arch is higher than the right. It has a sharp and rough border. By raising the upper fold of the mass, the orbit, with its contents and appendages, is presented for examination. The lids are hypertrophied. Their consistency is homogeneous. Cilia are seen over the margins.

The palpebral fissure is 4.5 cm. long. A creamy, mucoid, conjunctival secretion collects between the lids. Separating the lids reveals the velvety, hypertrophied and chronically inflamed conjunctiva. Its bulbar portion closes over the orbit. But little evidence of the culdesacs remains. Several vertical bands of scar tissue run through the conjunctiva. Palpation of the orbit from without discloses an absence of the globe. No tenderness is present. The cavity is smaller than normal.

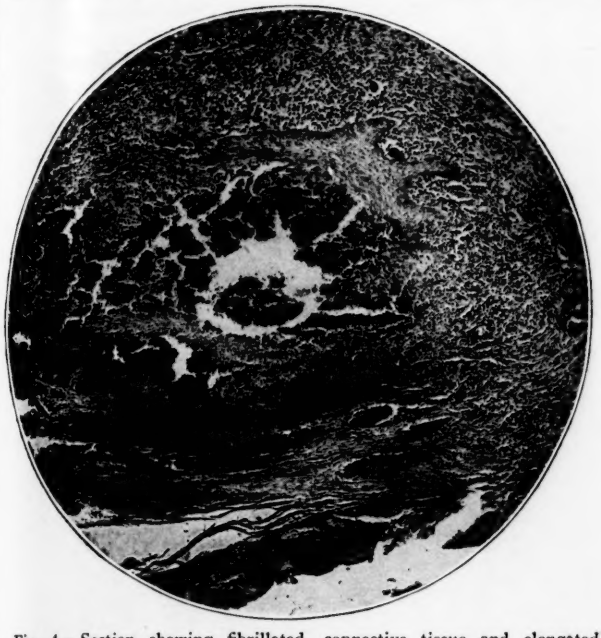

Fig. 4.—Section showing fibrillated, connective tissue and elongated cells with rod shaped nuclei, some of which are arranged in bundles.

The nose is huge. Its lower two thirds is greatly distorted. Only a small part of it on the right side appears uninvolved. In strong contrast to this the remainder of the organ is very prominent. Its flabby tissue merges with and hangs down with the structures on the left. The two nasal bones are present. The septum deviates to the right. Both nasal cavities are extremely roomy, with the left having a greater opening. The vibrissae are long and thick. All conchae are accounted for. The lips are markedly hypertrophied. To the left they slope inferiorly, with the outer fourth dipping down sharply to form a right angle. On the right, the lips, for a distance of 1.2 cm. on each side of the mouth, appear normal. Otherwise, they grow progressively worse to the left.

The angulated mouth measures 8.3 cm. After opening it widely, with the aid of the fingers, one sees an abnormally large cavity. The palatine process of the maxilla on the left side is acutely arched and shows an absence of teeth on the alveolar ridge. The line joining both processes is irregular. Partly covering over the left buccal mucous membrane is a fairly large neurofibroma, measuring 6.1 by 2.7 cm. It stretches across the horizontal meridian and is free on all sides except posteriorly, where it is firmly attached. It is smooth and nontender. The left mandible is smaller than the right and also shows the absence of teeth. Both palatine arches and tonsils are present but the left side is generally deformed. The roof of the mouth is highly arched. Protruding a little from the hard palate are two medium sized neurofibromas, smooth, oval and nontender. There is a left hemimacroglossia.

Temporally, the small lobe in front of the ear is rectangular. Horizontally, it measures 9 cm.; vertically, 5.1. Completely demarcating it are the healed scars of the previous operations. The lower half of the ear is moderately hypertrophied. Inferiorly, it blends with the surrounding tissue. An external auditory canal is present, but it ends blindly.

Below, the flabby, large, lower lobe hangs like an apron anterior to the neck. It sways with each movement of the body. In its most dependent portion, in the postero-inferior angle, is a small, bean sized, nontender mass, attached to the skin and the underlying tissue.

The corneal sensitivity of the right eye is slightly diminished. There is a hyperplasia of the corneal nerve fibers. The fundus is myopic.

Further physical examination reveals an embarrassment of speech, a palpable thyroid, and a left dorsal scoliosis. There are several molluscous neurofibromas and café-au-lait pigment patches scattered over the body, including both the trunk and the extremities. The tumors are round, smooth, nontender and about 1 to 3 cm. in diameter. At the left third costochondral junction is a small tumor with six black coarse hairs, 4.5 cm. long. In the left popliteal space is a larger tumor, 7 by 5 cm. Unlike the others, it is not attached to the skin but is subcutaneous. The pigment plaques are irregular and vary in size from 2.5 to 11.3 cm. There are a number of small, telangiectatic, fiery red spots over the trunk. The hands are large and show a fine tremor. They have an equally strong grip. There is no hyperextensibility of the joints. The skin stroking reaction is delayed.

The blood pressure is 130 systolic and 72 diastolic; the temperature, 98.6 F.; the pulse, 70 to 80, and the weight, 138 pounds (62.6 Kg.). All the latter figures have remained approximately constant during the last five years.

The patient is given the regular hospital diet. He eats and sleeps well.

The urine, blood count, hemoglobin, blood Wassermann, and carbohydrate tolerance tests, and examinations for melanin, glycosuria, albuminuria and eosinophilia are all negative.

Roentgen examination of the cranial vault shows areas of rarefaction and bone production. The sella turcica is considerably enlarged. It is square or box shaped. The clinoid processes are diverged, as though the pituitary body were enlarged. The floor of the sella turcica is not eroded, but appears to be compressed into the sphenoidal sinus. The petrous portion of the temporal bone shows the cystic appearance that is associated with neurofibromatosis.

Examination of the long bones of the extremities, and also the pelvic bones, reveals no evidence of any definite pathologic changes.

Fig. 5.—Skull, showing the enlarged, box-shaped sella turcica and the characteristic cystic appearance of the petrous portion of the temporal bone.

Microscopic examination of the excised tissue shows a growth of fibrillated connective tissue with numerous small blood vessels. Edematous areas are present. There are elongated cells with rod shaped nuclei, some of which are arranged in bundles suggesting nerve fibers. The surface of this section has a zone of polymorphonuclear leukocytes.

The diagnosis is neurofibroma.

133 East Fifty-Eighth Street.

DUODENOCOLIC FISTULA WITH INCOMPETENT SPHINCTER OF ODDI

CLARENCE E. REES, M.D., SAN DIEGO, CALIF.

This case of duodenocolic fistula is reported because of several unusual features: 1. The condition is apparently very rare, as I was unable to find any reports of a fistula between the duodenum and the colon which was not secondary to a malignant growth. 2. Traction from the fistulous tract had resulted in incompetence of the sphincter of Oddi, so that the contents of the duodenum were allowed to pass into the bile passages. This fact accounted for the unusual roentgen observations following the oral administration of barium, in which the ramifications of the hepatic tree were revealed, filled with the barium. 3. Finally, the fact that the liver had suffered no apparent damage in spite of the fact that it had been subjected to regurgitation of the contents of both the duodenum and the colon over a long period of time is rather remarkable.

The patient was a married woman, aged 62, who had always been in good health with no long illnesses except typhoid at the age of 34. She complained of indigestion and a sense of weakness or soreness in the pit of the stomach, which had been present for the past eight or nine months. She had first noticed that certain foods, such as pastry and candy, did not agree with her, and then that fruits and raw vegetables began to distress her, although she had periods of complete relief from discomfort. The distress came on about two hours after meals, accompanied by a great deal of gas and occasionally the vomiting of sour material. Saline laxatives, until recently, had given complete temporary relief. On only two occasions, however, was the distress severe, and the patient had always felt that she could control it by care in her diet. There was no history of gallstone colic and she had never been jaundiced. She had lost about 15 pounds (6.8 Kg.) since the onset of her trouble.

Fig. 1.—Postoperative study, direct lateral film, one-half hour after ingestion of barium meal: *A*, ampulla of Vater; *D*, duodenal bulb; *CD*, common duct. The ducts are visualized by the barium meal.

Physical examination was negative throughout with the exception of marked tenderness and muscle rigidity over the upper part of the abdomen. Urinalysis gave no abnormal results. A blood count revealed a hemoglobin of 14 Gm. (Newcomer) and 6,300 white corpuscles, of which 63 per cent were neutrophils, 34 per cent lymphocytes, and 3 per cent large mononuclears. The Kahn reaction of the blood was negative, and the serum showed no bile pigment.

From the Rees-Stealy Clinic.

Roentgen examination of the gastro-intestinal tract together with cholecystographic study was made. The roentgenologists, Drs. L. C. Kinney and A. E. Elliott, interpreted the results as indicating a nonfunctioning gallbladder, with evidence of thickening of the gallbladder wall. They stated that the outstanding finding of the barium meal was the relaxed ampulla of Vater, the partial filling of the common bile duct with the barium, and the barium distributed throughout the ramifications of a portion of the hepatic ducts. These observations suggested a relaxation

Fig. 2.—Postoperative study, six hour examination. The gallbladder and bile ducts in both lobes of the liver are visualized with barium.

of the ampulla of Vater with a retrograde movement of the barium solution. A fistula between the intestinal and the biliary tracts was to be considered.

Exploratory laparotomy was advised and performed. The stomach and pylorus were negative to inspection and palpation. The liver was found to be normal in appearance; the gallbladder was free, was slightly thickened and contained no stones. The common duct was dilated to about twice the normal size. On exploration of the duodenum, which was moderately dilated, a dense band of tissue was found extending anteriorly from the middle of the lateral aspect of the descending duodenum, over the lower half of the descending duodenum and the proximal portion of the horizontal duodenum, to the upper border of the transverse colon. Further dissection revealed a fistulous tract which, under the tension of its attachments, approximated 2¼ inches in length. When the tract was opened, it was found to extend from the lumen of the transverse colon to that of the duodenum just below the opening of the common bile duct. The traction had rotated the second portion of the duodenum so that the ampulla of Vater was located in the posterolateral position, and there was a small bridge of tissue between the opening of the fistulous tract and the ampulla of Vater. There was a dilatation of the common duct from the ampulla upward, and the ampulla was wide open. The fistulous tract was ligated and sectioned from the colon, and the stump was inverted in a manner similar to the treatment of an appendiceal stump. The upper end of the tract was removed from the duodenal wall and the defect closed with three layers of chromic sutures. The gallbladder was then opened, and considerable gas escaped.

Examination of the fistula itself showed that it contained the components of two separate organs, namely, the duodenum and the colon, the upper half being lined with intestinal epithelium similar to that of the duodenum and the lower half with epithelium similar to that of the colon. At about the midportion there was a small constriction, which could be identified as the point of anastomosis between these two structures.

Speculation as to the mechanism producing this fistula is interesting, and, in view of the fact that there is no embryologic explanation for it, it seems most reasonable to suppose that the perforation of an ulcer from the colon into the duodenum during the attack of typhoid, with subsequent elongation from traction, was responsible for its formation. The absence of a history of gallstones or jaundice and the fact that the fistula connected with the duodenum and not with the common bile duct seem to rule out the possibility of the rupture of the duodenum into the colon by a stone. We believe that the incompetence of the sphincter of Oddi was caused by traction from the long continued pull of the fistulous tract on structures surrounding the ampulla.

The postoperative course in this case was uneventful. At no time was there any evidence of intestinal contents or gas in the gallbladder drainage. Charcoal, when given by mouth, was not evidenced in the bile but methylene blue (methylthionine chloride, U. S. P.), given orally, appeared in the bile from the gallbladder within an hour following its administration. Methylene blue was then given to another patient with biliary drainage, with no resultant evidence of it in the bile.

Since operation, the patient has been following a general diet and has been symptom free. Recent roentgen examination, however, shows that the duodenal contents are still regurgitating into the bile ducts and roentgenograms taken postoperatively (figs. 1 and 2) show a more complete filling of the hepatic ducts and gallblader than do the plates taken before operation. Operation in this case did not result in the prevention of the duodenal contents from entering the bile ducts, because of the incompetence of the sphincter of Oddi, but it did result in the complete relief of symptoms, and, by the removal of the duodenocolic fistula, in the prevention of the regurgitation of the highly septic material of the colon into the duodenum, bile ducts and liver.

2001 Fourth Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

AMPLEAIR ACCEPTABLE

The AmpleAir Filtering Machine is manufactured by the Independent Air Filter Company, 29 South Clinton Street, Chicago. The purpose of the machine is to filter the air supplied to a small office room or bedroom, and more particularly for ridding the air of pollen as an adjunct for the relief of hay fever symptoms.

Resembling a radio console cabinet, the AmpleAir is 41 inches high, 26¼ inches wide and 16½ inches deep and weighs 190 pounds. The motor and the blower fan are mounted in the lower portion of the cabinet on resilient springs to eliminate motor noises. The inside of the cabinet is lined with soundproofing material. The rear upper portion holds the filter, which is enclosed in a removable container. This container is so designed that it may be removed easily from the AmpleAir without scattering dirt, dust and pollen in the room. The street air enters the rear of the cabinet in an adjustable duct which is dirt and dust tight and fits snugly into any window. The cabinet itself is mounted on ball-bearing casters with rubber rollers. Motors can be obtained to run on either direct or alternating current.

Air is drawn in the window piece through the filter to the fan and is discharged through a register at the top of the cabinet. The volume of the air may be controlled by a damper easily accessible by merely lifting the top. In case of either extremely cold or extremely hot weather a recirculating damper in the entrance duct can be turned, thus stopping the incoming air and recirculating and filtering the air within the room.

The filter material consists of a continuous strip of high grade wool felt 12 feet long and 20 inches wide and having an area of about 20 square feet. By an ingenious construction, the 20 square feet of material is folded plaitlike to occupy space in the removable filter container approximately 21½ by 17 by 7½ inches, thus making six folds about 12 inches high. The zigzag sleeve construction forms a tight seal, and under most circumstances the leakage of pollen around the edges of the filter is nil. If the air is relatively clean (not like the air around an industrial city, containing soot and dust), the filter will probably last the entire hay fever season without renewal. As the filter becomes dirty, however, the volume of air displaced through it is reduced.

The AmpleAir

The Council on Physical Therapy directed a test on the pollen filtering efficiency of the AmpleAir under conditions in which the dust concentration of the air was relatively high but the pollen concentration perhaps relatively lower than that which would be expected in suburban districts. Each day of twenty-four hours, two petroleum coated slides were exposed about one inch from the louvers at an angle slightly less than perpendicular to the blast of incoming air. The investigation demonstrated that very little ragweed pollen passed through the filter. Slides for each day were submitted to two specialists in the field, who counted the pollen granules. The recorded data are given in the accompanying table.

Pollen Filtering Efficiency of AmpleAir

	Pollen Granules per Cubic Yard						
Date	8/27	8/28	8/29	8/30	8/31	9/1	9/2
Ample air (average of two slides)	3	4	3	4	6	4 (new filter)	2
Filtered air in experimental room	3	1	3	2	8	2	0
Inside unfiltered air	25	52	230	145	No slide	No slide	No slide
Outdoor air	552	271	389	461	323	77	183
Humidity	84	No record	86	82	82	65	73
Wind direction	N.W.	No record	S.W.	S.W.	S.	N.E.	N.E.
Temperature (average)	No record	66	85	85	82	70	72
Air velocity							
Inlet	457 cu. ft. per minute						
Outlet	444 cu. ft. per minute						
Power	143 watts						

The volume of air displaced by the AmpleAir was measured by means of a Tycos anemometer. The louvers were removed and the anemometer was placed on a sliding rack just above the register opening. At intervals definitely selected in order to give a representative cross-section of the area of the opening, anemometer readings were observed, each for a unit time. After the correction of the anemometer readings had been subtracted or added, as the case may be, the average of the anemometer readings was calculated. A correction was made for the wind velocity through the machine. The product of the area of the opening and the average speed of the air was considered the volume of the air displaced. Similar observations and calculations were made for the intake opening. The intake volume figured 457 cubic feet per minute, whereas the outlet was 444 cubic feet per minute. Readings were observed with the door of the room partly open to make sure that no back pressure was present. The committee is aware that some authorities believe that a Pitot tube is a more accurate instrument than the anemometer for velocity determination. Never-

theless, the committee believes that the observations herein recorded are relatively accurate.

If the AmpleAir is installed in a small office or bedroom, the Council believes that the unit will supply enough filtered air to satisfy a few persons desiring relief from the symptoms of hay fever. Clinical evidence coming to the attention of the Council indicates conclusively that patients are relieved only when they remain in a filtered atmosphere. Evidence that a hay fever patient will obtain relief for the entire day merely by remaining in a room with filtered air for eight hours, more or less, is lacking.

The Council on Physical Therapy believes that the AmpleAir will supply sufficient filtered air for a small office or bedroom occupied by two or three people and will serve as an adjunct in the relief of symptoms of hay fever. The Council declares the AmpleAir eligible for inclusion in the Council's list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. P. N. LEECH, Secretary.

METAPOLLEN NOT ACCEPTABLE FOR N. N. R.

"Metapollen," a product of Metapollen Laboratories of Carbondale, Ill., is proposed for the intranasal treatment of hay fever and associated conditions, and for a variety of disorders originating in the nasal passages. Following are examples of the claims made for this preparation: "Quickly breaks up any attack of Hay Fever at any point in the course of an attack"; "100 per cent are relieved for two years or longer"; "Any one can administer Metapollen successfully"; "Safe, Certain, Satisfactory"; "Produces no systemic reaction"; "No anaphylaxis possible in any case at any time"; "Metapollen (intranasally) is curative in all types of hay fever . . . [and] . . . in most cases of pollen asthma"; "When used in combination with Mangalac . . . it is curative in acute and chronic sinusitis (without surgical drainage) and in acute and chronic otitis media"; "In hypertrophic rhinitis it is curative, and in atrophic rhinitis it is the remedy of choice . . ."; ". . . there are no contraindications to its use"; "Inexpensive" [only "$11.50 per kit"—no orders on account or C. O. D. and no samples].

The Council has received numerous inquiries from physicians, many frankly skeptical, concerning "Metapollen." Therefore, inquiry as to the composition of this preparation was made by the A. M. A. Chemical Laboratory. In a reply signed by E. E. Edmondson, Medical Director, it was stated that Metapollen is not a secret preparation; that its formula had been published.

It was gathered from the letter that at various times Metapollen had contained "glycerite of aluminum," silver nitrate, zinc chloride, zinc sulphate and copper sulphate, in various combinations and proportions. It was stated further in the letter: "We have no formula we would not change without notice if we see improvement by so doing." Together with the Metapollen solutions a preparation in tablet form is used, "Compyrine," said to consist originally of 5½ grains of a mixture in unstated proportions of "dimethylamine antipyrine" (amidopyrine), caffeine, phenacetin and hyoscyamus; this was later changed to a 5 grain tablet of nothing but amidopyrine with no change in the name. The remainder of the treatment consists of a local anesthetic (2 per cent of cocaine "muriate") and an inhalant said to contain menthol, camphor, thymol and methyl salicylate, also in unstated proportions. It appears that no special trade names have been applied to the latter two preparations.

WHAT IS METAPOLLEN?

Reference to circulars distributed by the manufacturer, to reprints of three articles by Dr. Edmondson and to the letter quoted, reveals the following descriptions of Metapollen:

". . . a balanced synergistic astringent of silver, zinc, aluminum, tetramethylthionine chlorydrate [presumably tetramethylthionine hydrochloride, which is methylene blue] in specially prepared hypertonic media."

"Aluminum-silver and zinc . . . a 1 per cent solution of equal parts of the three drugs in a glycerine-aqueous solution."

". . . a balanced synergistic, antiseptic astringent of aluminum, silver and zinc aa—q s ad gr. xxx to oz."

". . . The therapeutic solutions run now in strength from about 2 per cent to about 8 per cent of the salts."

Nowhere in this "literature" does there occur a simple, accurate and concise statement of composition. The latter varies apparently at the caprice of the manufacturer.

The Metapollen treatment of hay fever apparently proceeds in this fashion: The patient is given a 5 grain tablet of "Compyrine" (amidopyrine); a short time later his nasal mucosa is anesthetized with 2 per cent cocaine hydrochloride solution (the use of epinephrine and ephedrine is interdicted, although for what reason it is not apparent); then the Metapollen solutions are applied by dropper, spray or swab to the accessible portions of the nasal and nasopharyngeal mucous membranes, following which the patient is allowed to sniff the inhalant described, to allay somewhat the irritant action of the treatment. Following this, he is given another tablet of "Compyrine" and possibly yet another still later. Occasionally, the pain is further allayed by the use of one of the barbiturates. This procedure, except that the amidopyrine dose is later reduced, is carried on daily or every two or three days for from six to eight weeks (or longer). In sinus disease the treatment is still further complicated by the intramuscular injection every five days for seven doses of 5 to 10 cc. of "Mangalac," said to consist of "0.045 Gm. Manganese butyrate to oz sterile fat-free milk and 9 min. 1:1000 solution Spengler's Immun Korper"; the latter appears to be a complex form of nonspecific protein therapy.

"NO POLLEN IN METAPOLLEN"

With respect to the names here employed, Dr. Edmondson has the following to say: "As there is no physics in METAphysics, and no carpal in METAcarpal, except the names, so there is no pollen in Metapollen. . . . The compound tablet was also called Compyrine and still is so named, though we have changed the formula."

In respect of the therapeutic usefulness there is furnished a list of case reports, in large part by Dr. Edmondson; in addition there are a number of testimonials alleged to have been made by physicians and others, all describing in glowing terms the remarkable and permanent relief from nasal and otologic symptoms, and even from asthmatic attacks, all attributed to this treatment.

USE OF ASTRINGENTS

The use of astringents of this sort on the nasal mucosa is not new, nor is the use of any of the alleged constituents of Metapollen. The formulas of the mixture, or mixtures, according to the advertising literature, are admittedly not constant and may be changed momentarily without notice at the whim of the manufacturer. The use of a proprietary name, let alone as suggestive and misleading a one as "Metapollen," is certainly unwarranted. There is no evidence that the effects of aluminum, zinc and silver salts in combination are any different from those of the individual salts used separately; one wonders about the compatibility of the solutions. The use of a proprietary name for amidopyrine, the same name that was previously used for a mixture of that drug with several other compounds, shows the extent to which regard for scientific decency in nomenclature has been sacrificed.

The daily use on the nasal mucous membrane of highly astringent solutions, such as apparently are sold under the name Metapollen, may be fraught with serious consequences. The nasal vault is lined with a delicate ciliated epithelium, sensitive to medicaments of all sorts. Such treatment, it is likely, would result in destruction of the mucous membrane and replacement with stratified squamous epithelium. The object of shrinkage of the nasal structures might be attained, but at the expense, probably, of the normal physiologic functions of the nasal mucosa.

Even if, regardless of these considerations, such treatment should be undertaken, it would be essential that the physician know precisely what substances he is using and in what concentrations. This would be impossible with the mixtures under consideration.

Further, the originator of this treatment appears to have taken no notice of the probable habituating effects of a daily intranasal dose of cocaine for a period of six or eight weeks.

It would not be overstating the case to say that this is a highly dangerous procedure. The Council considers as particularly reprehensible the advice of frequent cocainization of the nasal passages.

The Council declared Metapollen to be unacceptable for inclusion in New and Nonofficial Remedies because no satisfactory formula has been furnished by the manufacturer (rule 1); no tests for identification and purity have been established (rule 2); claims of special therapeutic usefulness are not warranted by the evidence (rule 6); the name is objectionable (also true of "Compyrine") as it is not indicative of composition (rule 8); the composition is unscientific (rule 10).

Committee on Foods

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

MORTON'S IODIZED SALT

Manufacturer.—Morton Salt Company, Chicago.

Description.—Table salt containing 0.023 per cent potassium iodide, 0.1 per cent sodium carbonate and 0.7 per cent magnesium carbonate. The sodium and magnesium carbonates tend to preserve the free running properties.

Manufacture.—Morton's Free Running Salt (THE JOURNAL, May 14, 1932, p. 1745) is admixed with definite quantities of potassium iodide by carefully controlled methods to assure a uniform mixture of the desired composition given above.

Analysis.—(submitted by manufacturer).—

	per cent
Moisture	0.1
Salt	98.5
Potassium iodide	0.023
Magnesium carbonate	0.7
Magnesium chloride	0.01
Sodium carbonate	0.1
Calcium carbonate	0.01
Calcium sulphate	0.52
Calcium chloride	0.03

Claims of Manufacturer.—This iodized salt is for all table and cooking uses of salt. The added sodium and magnesium carbonates tend to preserve its free running qualities. The iodine in the salt aids in preventing goiter caused by insufficient iodine in the diet. Used daily as the only salt on the table and in cooking, it richly supplements the iodine of diets deficient in that element and thus helps to protect against goiter.

ATLANTIC SUPER-CLARIFIED GELATIN

Manufacturer.—Atlantic Gelatin Company, Inc., Woburn, Mass.

Description.—Granular and flake plain unsweetened, unflavored gelatins; graded on the basis of jelly strength for special uses.

Manufacture.—Atlantic gelatin is made from calf, beef and pork skin trimmings of animals used for human consumption. A limited amount of gelatin is made from osseine—a derivative of packer bone.

When calf and cattle trimmings are used they are thoroughly cleansed in water, are treated with alkali solution to convert the collagen into gelatin, are washed thoroughly in water to remove the alkali, and the last traces of alkali are neutralized by the addition of arsenic free hydrochloric acid. The treated skins are removed to wooden cooking vats with perforated aluminum false bottoms and covered with hot distilled water, which extracts the gelatin. The gelatin solution is admixed with porous, cellular mineral filter aids and filtered through cloth covered aluminum filters under pressure in order to remove suspended matter. The filtered gelatin solution is concentrated with the aid of heat in "vacuum," is filtered again, is cooled and flowed onto a rubber belt which passes through a closed refrigerating chamber where it is chilled and jellied, is transferred to clean wire nets of monel metal and is dried by warm air currents in closed tunnels. The dry gelatin is broken, ground and mixed by machine; the uniform granular product is packed in wooden barrels, containing cellulose fiber or cotton bag inserts.

Gelatins made from pork skins are prepared in the foregoing manner excepting that the skins are treated with acid instead of alkali solution at the start of the processing for converting the collagen into gelatin. The excess acid is removed by washing, after which the gelatin is extracted and treated as previously described.

Gelatin made from osseine is prepared from edible bone materials commercially available as a raw product. The osseine is treated with alkali solution to convert the collagen into gelatin. The alkali is removed by thorough washing, and remaining traces are neutralized with arsenic free hydrochloric acid. Subsequent treatment is similar to that for calf and cattle skins.

Every batch of gelatin is subjected to laboratory examination and is tested for total bacteria, B. coli, gelatin liquefiers, jelly strength, color, clarity, viscosity, arsenic, copper, zinc, sulphur dioxide, moisture and ash.

Analysis (submitted by manufacturer).—

	per cent
Moisture	8.0–12.0
Ash	0.4– 1.3
Fat (ether extract)	0.0– 0.0
Protein (N × 5.55)	86.0–90.0
Carbohydrates	0.0– 0.0

Jelly strength of different grades: (Methods of the Edible Gelatin Manufacturers' Research Society of America, Inc.), 50—290 Bloom.

	parts per million
Arsenic (As)	0.0–0.5
Copper (Cu)	0
Zinc (Zn)	0
Lead (Pb)	0
Sulphur dioxide (SO_2)	0
Added preservatives	none

Calories.—3.6 per gram; 102 per ounce.

Micro-Organisms.—The manufacturer guarantees absence of Bacillus coli, other gas forming bacteria, and liquefying and pathogenic bacteria.

Claims of Manufacturer.—Food gelatins designed for special uses, prepared from the edible skin and bones of government inspected animals; recommended for use in normal and restricted diets and in all food gelatin preparations.

HEINZ PURE (VIRGIN) OLIVE OIL (Imported)

Manufacturer.—H. J. Heinz Company, Pittsburgh.

Description.—Imported first cold press (virgin) Spanish olive oil.

Manufacture.—Selected olives at the proper stage of ripeness, from the best olive growing districts in Spain, are pressed cold to expel the oil. Only the oil from the first cold pressing is used for this brand. The oil is washed, allowed to settle and filtered. Oil with richer bouquet is blended with more delicate bland oils to produce a uniform product with desired fine characteristic flavor. At no stage in the process of production is any neutralization or other treatment used to reduce acidity, remove malflavors, or otherwise conceal inferiority.

The oils obtained from producing factories in Spain are assembled and blended in a Heinz factory at Seville, Spain. The blended oil is imported into the United States in steel drums. The quality is again checked and the product finally packed in glass bottles or tin cans.

Analysis (submitted by manufacturer).—

Specific gravity, 15.5 C./15.5C	0.915
Refractive index at 15.5 C	1.471
Saponification number	183.
Iodine number	81.6
Acidity as oleic acid	0.5%
Cotton seed oil	absent
Sesame oil	absent

Calories.—9.0 per gram; 256 per ounce.

Claims of Manufacturer.—The olive oil complies with U. S. P. and U. S. Department of Agriculture requirements.

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SATURDAY, FEBRUARY 18, 1933

MEDICINE AND THE EXPERIMENTAL LABORATORY

A recent contributor [1] to current medical literature has commented on the change that has taken place in diagnosis and therapeutics through the adaptation of chemistry, physics and some of the biologic sciences to clinical needs. During the past two decades, signal advances have been made: in internal medicine through a better understanding of the chemistry of the blood under various conditions, in electrocardiography and physical therapy by the application of newer developments in physics, and in the control of infectious diseases by the use of recent discoveries in bacteriology. The view has frequently been voiced that the obvious tendency to depend increasingly on the laboratory for aid in diagnosis or in following the response to treatment is not particularly encouraging; fear is expressed lest the product of modern training lose the *tactus eruditus*. To other observers it is plain that the rise of laboratory medicine is part of a cycle of change and that the pendulum of interest in this direction has already begun to swing backward somewhat. However, it must be recognized that many highly desirable permanent changes have been introduced into medicine during this period of readjustment.

A particularly able defense of the importance of scientific experimentation to medicine has recently been made by Mendel.[2] This recognized leader in the field of nutrition has analyzed the question both searchingly and with a benign attitude. He begins by pointing out how rare are the opportunities to conduct satisfactory experiments on human subjects. The difficulty of controlling conditions adequately as well as the inadvisability of bringing about abnormal deviations have restricted the investigator to the use of human subjects in whom functional or structural abnormalities are accidental. Inevitably, therefore, the investigator has been forced to study disease or to practice surgical operations on laboratory animals. With cogent illustrations, Mendel emphasizes the large part of the available knowledge of physiology and of medicine in general that has been derived directly or whose development has depended on information obtained from studies on laboratory animals, and he points out that continued control of infectious diseases and the possibility of future discoveries in physiology would be lost if the misguided efforts of the antivivisectionists should be successful.

What attitude should the physician take toward the experimental sciences allied to medicine? With a fine sense of values Mendel agrees that, whereas his primary duty and interest should be with the understanding and treatment of disease as manifested in the patient, he must not fail to recognize the significance to medicine of the contributions made by investigators in the laboratory. Furthermore, an open attitude of mind must be cultivated lest one fail to appreciate that the practical value of experimental studies is not always immediately demonstrable. "That person must indeed be endowed with unerring judgment who can readily distinguish between scientific value and ultimate utility in research." Abnormal conditions that represent disease cannot be adequately studied or understood without a satisfactory appreciation of the normal behavior of the organism. It is of the utmost importance, therefore, that there be maintained the freedom and facilities for renewing acquaintance with normal life processes in the experimental laboratory.

The question of scientific experiment and medicine is of perennial interest. Medicine is constantly expanding the scope of its interest, and members of the profession should take a corresponding place in society. Surely there is no greater aid to perspective, poise and effective activity than an adequate appreciation of the manifold pathways by which have emerged those contributions which, in the final analysis, constitute medicine.

1. Smith, A. H.: Practitioners Series, New York, D. Appleton & Co. **1**: 849, 1932.
2. Mendel, L. B.: Science **76**: 393 (Nov. 4) 1932.

ERADICATING BOVINE TUBERCULOSIS

Again there is a struggle over the question of eradicating bovine tuberculosis as a health measure. In Iowa, organized resistance to the area test method has been rife for more than a year and has now flamed into aggressive action in connection with the resistance to foreclosure actions. Troops have enforced the testing of cattle in accordance with the law, but finally the secretary of agriculture has declared a holiday on testing pending legislative action. A newspaper comment, emphasizing the economic implications of the controversy, declares [1] that "this T. B. proposition has a kick like a bay steer" and that "the secretary may find that he has a maverick by the tail."

1. Cedar Rapids Gazette, Jan. 25, 1933.

The question of bovine tuberculosis and its relationship to the disease in man was raised by Koch,[2] who held that the two forms of the organism were different and that the danger of infection of human beings by the bovine form was to all intents and purposes nil. In the first premise he was correct, as Theobald Smith [3] demonstrated; in the second he was wrong, as has been proved many times since, notably by Park and Krumwiede,[4] Kossel [5] and Griffith.[6] It has also been demonstrated that the usual form which tuberculosis of the bovine type takes in the human patient is the nontuberculous, especially bone and gland.[7] Kossel showed that occasional instances of pulmonary tuberculosis may be encountered, though these are admittedly rare. In short, there is abundant evidence that the bovine bacillus may infect man.

The presence of widespread tuberculous infection of cattle has long been recognized. Raw fluid milk furnished to city markets may contain the living tubercle bacilli, as shown by Tonney, White and Danforth [8] in a recapitulation of the results of forty-two observers over a period from 1893 through 1925, showing high percentages of positive examinations in both European and American city market milk specimens in both the earlier and the later years. The issue, from the standpoint of the public health, is clear. Cattle as a source of human tuberculosis must be controlled. It is on the method of control that differences of opinion are based, as in the present situation in Iowa.

The percentage of infection in cattle is known to be highest in the Eastern states, where herds, particularly of blooded stock, have been freely replenished from European sources. Infection in European herds runs as high as 40 per cent, according to Sir George Newman,[9] chief medical officer of the British ministry of health. Tick fever has prevented importation into Southern herds, and range cattle are relatively free from infection.[10] Apparently, then, the milk sheds of the densely populated areas in this country are relatively more heavily infected. In these areas, particularly, assurance of a pure and safe milk supply is most vital.

The United States has adopted the so-called area plan for eradicating bovine tuberculosis. This grew out of earlier experience with certified and class A milk herds, in which it was demonstrated that by removing from a herd those animals which react to the tuberculin test, and repeating the procedure at stated intervals, the herd can be freed from tuberculosis and can be kept free if all animals added have been ascertained to be free from tuberculosis, or if the herd is augmented exclusively by natural increase. The area plan consists of testing all the animals in a given area (county) under authority of a state law which makes the test mandatory when a specified percentage of owners have signed a petition for it. The state, aided by federal subsidies, indemnifies the farmer for the larger part of his loss. Indemnity provisions vary in detail according to different state laws.

Although most farmers and dairymen, recognizing the economic advantages as well as public health demands for tuberculosis-free cattle, favor the eradication of tuberculosis by the means described, there has been opposition. The opposition is grounded in a failure on the part of some farmers to comprehend the seriousness of the need for eradication of tuberculous cattle, plus a lack of understanding of the test itself and what it means. The sentiment against the test has been skilfully fanned by propagandists actuated by motives best known to themselves, among them the American Medical Liberty League, so called, an organization devoted to opposing all progress in scientific medicine, presumably in the interests of the so-called drugless healers, who constitute a large part of its membership. THE JOURNAL has discussed this organization before; [11] opposition to tuberculin testing is precisely what would be expected among the bizarre fulminations of an organization so largely influenced by the ubiquitous George Starr White, to whom also THE JOURNAL has paid its respects on other occasions.[12]

The objections which have been raised against the testing of cattle for tuberculosis and the slaughter of reactors have included the charge that it was engineered by the packers in order to get beef at their own prices, this being coupled with the accusation that unfit meat from these animals was used for food. The test has been declared unreliable. The claim has been made that cattle were sickened by the test and became tuberculous, a post hoc ergo propter hoc fallacy based on the fact that some animals pass a clean test or two and then react. The test has been blamed even for abortion and stringy milk. This propaganda, assiduously spread, has impressed a sufficient minority of the farmers to cause opposition.

Wiser heads among the dairymen and farmers know that, if statute law is rescinded, the inexorable force of economic law will compel testing sooner or later; for enlightened parents, demanding safe milk for their children, will assure that ultimately there will be no market for the products from untested herds. Repeal of the area test laws now in force would be unfortunate, for the progress made under them has gone far to eliminate tuberculosis in cattle and will go further to virtually complete success. Economic stringency, sharpening all discontent and too often focusing it on the wrong scapegoat, appears to be threatening this as

2. Koch, Robert: Berl. klin. Wchnschr. **15**: 221, 1882.
3. Smith, Theobald: J. M. Res. **3**: 451, 1898.
4. Park, W. N., and Krumwiede, Charles: J. M. Res. **33**: 205, 1910.
5. Kossel, H.: Veröffentl. d. R. Koch-Stift. z. Bekämpf. d. Tuberk.
6. Griffith, A. S.: J. Path. & Bact. **31**: 875 (Oct.) 1928.
7. Park and Krumwiede.[4] Griffith.[6]
8. Tonney, F. O.; White, J. L., and Danforth, T. F.: Am. J. Pub. Health **17**: 491 (May) 1927.
9. Bovine Tuberculosis in Man, British Ministry of Health, Rep. 63, Pub. Health & M. Sub., H. M. Stationery Office, 1931.
10. Cotton, C. E.: Journal-Lancet **52**: 229 (April 1) 1932.
11. The American Medical Liberty League, J. A. M. A. **79**: 395 (July 29) 1922. Reprints may be had gratis when stamped addressed envelops are sent.
12. George Starr White—Quack, J. A. M. A. **92**: 1292 (April 13) 1929.

well as other safeguards which in more prosperous times are accepted unquestioningly as necessities for the preservation of the public health. To scuttle them now will lead to consequences which future generations will regret. Pasteurization will help to protect our cities, but even that is subject to human error and carelessness, and when imperfectly carried out it has been shown to be ineffective in protecting the user of milk against tuberculosis.[13] Moreover, threats are heard against pasteurization ordinances, on the specious ground that they raise the price of milk.

The situation in Iowa is ominous, not for Iowa alone but for other states to which the agitation may spread. The ease with which sound public health procedures can be placed in jeopardy is a significant commentary on the status of health education of our adult population. The medical profession must rally to the defense of the public against its own folly, a duty which the profession has always discharged, many times at heavy sacrifice.

Current Comment

INTRA-ARTERIAL ARSPHENAMINE THERAPY

The local spirocheticidal effect of intravenously injected arsphenamine conceivably varies with the amount of arsphenamine deposited in the local tissues. If so, the recently described method of increasing the local deposit of the drug in the central nervous system, by substituting intra-arterial for routine intravenous injection, is of research interest. While Kritschewski and Winogradowa[1] have thus far carefully avoided suggesting any possible clinical application of their new intravascular technic, their demonstration of variability in histologic distribution with different methods of intravascular therapy may be a valuable addition to our knowledge. The microscopic demonstration of locally phagocyted intravenous arsenicals was made possible by the Janeso-Jimenez de Asua[2] technic, which fixes and precipitates certain arsenicals without altering their distribution in tissue cells. Study of such fixed tissues from intravenously injected mice revealed the cells of the pulmonary capillaries engorged with phagocyted arsphenamine derivatives, with similar massive local deposits in the endothelial cells of the liver and the spleen. The other tissues were relatively free from demonstrable arsenic, the brain, for example, showing only an occasional endothelial granule. The distribution is quite different after intra-arterial (i. e., intracardiac) injection. The pulmonary capillaries are now nearly free from demonstrable arsphenamine with similar reductions in the local liver and splenic deposits. The resulting increase in available arsphenamine for other tissues is particularly apparent in the brain. In the published photomicrographs, the brain capillaries of intra-arterially injected mice contain nearly a hundred times the amount of neurovascular deposit seen in mice that were given intravenous injections as controls. Whether or not there are similar local quantitative variations in vaccines, antibodies and other therapeutic agents injected into the blood stream has not yet been tested.

13. Bovine and Human Tuberculosis, editorial, J. A. M. A. **86:** 554 (Feb. 20) 1926.

1. Kritschweski, I. L., and Winogradówa, O. W.: Ztschr. f. Immunitätsforsch. **75:** 410 (numbers 5-6) 1932.

2. von Janeso, N., Jr.: Ztschr. f. d. ges. exper. Med. **61:** 63 (May 21) 1928. Jimenez de Asua and Kuhn: Compt. rend. Soc. de biol. **99:** 242 (June 22), 1414 (Nov. 9) 1928.

ANOTHER EXCELLENT HEALTH RECORD

Economic necessity has created a sharp issue between the advocates of retrenchment in government at any cost and those who demand the preservation of public services that have justified their cost. Public health services have been the target in many places where reduction of budgets has been undertaken. Chicago has shown recently how economic necessity and health conservation can be reconciled.[1] In 1932, Chicago had a general death rate from all causes of 9.7 per thousand of population and an infant death rate of 50 per thousand living births. This surpasses even the splendid record of New York, to which reference was made recently.[2] For a cosmopolitan as well as metropolitan center like Chicago, this may be classed as an achievement of the first magnitude. It surpasses any previous record made in Chicago, the next best year being 1927, when the death rate was 10.4 and the infant mortality rate was 53.4. The record was made in the face of budget economies totaling $500,000 as compared with 1931. The Chicago figures prove that economy and efficiency in government service are not incompatible. Health officials who face necessary curtailments in budgets can, by cutting their coat to fit their cloth instead of lamenting the need for reducing their budgets, produce results that are not only highly satisfactory to the taxpayers but creditable to the public health movement. Such a record may well be a source of pride to the workers who have made it possible. Incidentally, the employees of the health department are, like other employees of the city of Chicago, serving with their salaries many months in arrears.

HORMONAL INTEGRATION OF BACTERIA

An infectious disease is presumably not a guerilla warfare between the animal body and individual bacteria but a physiologic battle against an organized infectious foe. This theory of a chemically integrated infectious material is suggested by recent studies of interbacillary "activators" or hormones, notably by Miller[1] of Western Reserve University. The Cleveland investigator prepared sterile extracts of a strain of Bacillus tuberculosis that showed a definite tendency to develop non-acid-fast forms on routine culture mediums. This extract was first passed through a Berkefeld filter and then autoclaved to insure complete sterility. The autoclaved extract contained a growth-stimulating hormone for other strains of Bacillus tuberculosis, together with a "transformation factor" causing

1. Press Service, Chicago Board of Health, Herman N. Bundesen, president, Jan. 14, 1933.

2. A Health Record for 1932, editorial J. A. M. A. **100:** 261 (Jan. 28) 1933.

1. Miller, F. R.: J. Exper. Med. **56:** 411 (Sept.) 1932.

a fairly rapid "mutation" of these strains into non-acid-fast phases. With five of the six strains thus far tested with such extracts, the growth was apparently wholly of non-acid-fast types, or atypical pleomorphic forms similar to those recently described by Mellon.[2] These pleomorphic forms included non-acid-fast individual cocci, diplococci and tetrads, as well as non-acid-fast diphtheroids, branching forms, and forms containing spore-like nuclei, granules or inclusion bodies. After from four to eight generations in contact with the "non-acid-fast hormone," seventeen of these pure non-acid-fast cultures were returned to routine culture mediums. Only four of these have thus far reverted to or regenerated their original acid-fastness. Thirteen have been at least relatively stabilized in their non-acid-fast phase.

Medical Economics

NEW FORMS OF MEDICAL PRACTICE

13. Group Hospital Service, Inc., St. Paul

Nine St. Paul hospitals have joined in the formation of a corporation, "not for profit," which will manage this scheme for the benefit of these hospitals and any others that may subsequently enter the scheme. Those now listed are Bethesda, Midway, Charles T. Miller, Mounds Park, St. John's, St. Joseph's, St. Luke's, St. Paul's and West Side General.

The plan is explained in an article by Peter D. Ward and A. M. Calvin in *Minnesota Medicine* for December, 1932:

Because the hospitals of Saint Paul believe there is an opportunity for them to provide scientific service to respective social classes who can budget their incomes to provide periodic payments of small sums to insure hospital care when it is needed, they propose to organize, for full or part-time employed persons, a group hospitalization plan whose fundamental principle is to provide hospital care for twenty-one days each year to its members for a fee of seventy-five cents (75c) per month, or nine dollars ($9) per year. Thus, the hospital bill will be carried by a group rather than an individual.

Such an organization will be called "Hospital Service, Incorporated," and will be controlled by the participating hospitals through a Board of Trustees composed of one board member and the superintendent of each participating hospital. Thus, there will be eliminated the possibility of abuse by either an individual or by a commercial organization, such as those who are promoting various hospitalization plans throughout the country and whose sole interest is monetary. All benefits derived from the plan proposed for Saint Paul will be given to the patients and the participating hospitals.

There is no thought of profit-making in this plan, but only to collect sufficient funds from the groups to cover the actual cost of hospital care for those members who need hospitalization. Nor should this be interpreted as an insurance plan, as it offers only hospital service to patients under physicians' care. Such a plan in no way competes with the physicians' professional services.

To establish and make workable this group hospitalization plan it will be necessary to obtain three to five thousand members, then the law of average will apply safely, although the memberships at no time will exceed the margin of the number of unoccupied beds of the participating hospitals.

The organization will deal with groups, not individuals. Each member will be given full liberty in the choice of one of the participating hospitals, as well as his choice of physician, provided the latter is in good standing and acceptable to the selected hospital.

The membership fees will be collected by payroll deduction and paid to the Hospital Service, Incorporated, which will in turn reimburse the hospitals for their services.

To each member, in case of illness necessitating hospitalization, will be furnished hospital care, including board and accommodation in a ward bed (although he may have private or semi-private room accommodation by paying the difference between the two, less a discount of 25 per cent); operating room service, anesthetics; general nursing, including undergraduate and graduate staff; service of dietitian; clinical laboratory service to the amount of $15; x-ray to the amount of $15; routine medicines, hypodermics; surgical dressings, and all other usual hospital services.

In case hospitalization beyond the number of days allowed is required, service will be furnished at the regular rate, less a 10 per cent discount, for a period not exceeding ninety days.

Hospital service required when a member is not confined to the hospital will be furnished at the regular rate, less a 10 per cent discount.

Services not furnished are those of the physicians, surgeons, and special nurses; nor are special nurses' board and special prescriptions supplied.

A member will be given hospital service only on the recommendation of his physician who is a member of the medical staff of the selected hospital, or who is acceptable to the selected hospital, and only during such time as he is under treatment and care of such physician. He is to leave the hospital when discharged by his physician; otherwise, he will be requested to pay in cash full hospital charges for services received after advisement that further hospitalization will be unnecessary.

Compensation, mental, contagious and tuberculous cases are exempted. Dependents of members are given 10 per cent reduction on hospital charges for a period of ninety days or less, and in case of epidemic or disaster overcrowding the hospitals the obligation to the member may be discharged on refund of the amount paid during the current year.

In a note added to the foregoing article it is stated that:

It will be perfectly satisfactory to the organization to have several members of the Executive Committee of the Ramsey County Medical Society serve on the Board of Trustees, or to have the Executive Committee of the R. C. M. S. serve in the capacity of an Advisory Committee.

The contract between the Group Hospital Service, Incorporated, and the individual hospitals provides for the accumulation of a reserve equal to $9 for each member, and for the distribution of all sums in excess of such an amount to the member hospitals "on the basis of the number of days of hospital service rendered by each since the day on which the last distribution was made."

The hospital is to receive $5 per patient day for twenty-one days, and the amount of the discount that may be granted under the contract for additional hospitalization or for the care of dependents.

COMMENT

The merits and demerits of this are much the same as those of similar plans previously discussed. It has erected safeguards against exploitation by outside agencies and shows a willingness at least to accept the advice of the county medical society. There are not yet available sufficiently accurate actuarial estimates to determine whether the amount charged is adequate to meet the expenses, especially if there is a growing tendency on the part of members to demand hospitalization. Such a tendency to demand increased services has always arisen when a large number of people pay for such services in advance.

The fact that the plan is apparently to be confined to employed persons and to depend on the "check-off" system for collections justifies the criticisms of partial compulsion, the exclusion of large sections perhaps most in need of medical services, and the possibility of payment over a period of years only to be disqualified for benefits through discharge when most in need of such services.

The plan carries the dangerous possibility of division of the medical profession and consequent weakening of control of professional standards that are characteristics of all such plans not based on unified action by the county medical society.

The clause providing "hospital service required when a member is not confined to the hospital" suggests that the hospital scheme proposes to enter the field of offering diagnostic and laboratory service in competition with private practitioners, illustrating the tendency of such schemes to expand beyond the legitimate field of hospitalization.

2. Mellon. R. R., and others: Proc. Soc. Exper. Biol. & Med. **30:** 80, 110 (Oct.) 1932.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 9:45 to 9:50 a. m. (central standard time) over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

February 20. The School Lunch.
February 22. Occupational Diseases.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

February 25. Have You Missed Something?

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal. — Dr. James A. Summers recently resigned as health officer of North Little Rock to accept a similar position for Pulaski County.

Bill Introduced.—H. 200, to amend the optometry practice act, proposes to define the practice of optometry as "the employment of any method or means, other than the use of drugs, medicine or surgery, for the diagnosis of any optical defect, deficiency or deformity, or visual or muscular anomaly of the visual system, or the prescribing or the adoption or the duplication of lenses, prisms, or ocular exercises for the correction, relief, or aid of the visual functions."

CALIFORNIA

Personal.—Dr. David B. Fields, for nearly thirty years health officer of Trinity County, has retired because of illness. Dr. Charles H. Law, Weaverville, has been appointed to succeed Dr. Fields.——Dr. Ina M. Richter, assistant clinical professor of medicine, University of California Medical School, San Francisco, has become director of La Loma Feliz School near Santa Barbara, which was recently established to teach handicapped children, especially those with heart disease, to live within the limits of their handicap. Dr. Richter, who relinquished practice in San Francisco, Dec. 15, 1932, has also been secretary of the milk commission of the San Francisco County Medical Society.——A dinner in honor of Dr. Francis M. Pottenger, Monrovia, retiring president of the American College of Physicians, was given by Southern California members of the college in Los Angeles, January 12; Dr. David P. Barr, St. Louis, was the guest speaker.——Dr. Joseph F. Poheim has been appointed chief of the city physicians of San Francisco; for ten years Dr. Poheim was one of the six physicians employed in this capacity; he will be succeeded by Dr. Louis D. Roncovieri.

Bills Introduced.—A. 984, to amend the dental practice act, seems to be designed to enable licensed dentists to practice dentistry as employees of corporations without subjecting themselves to revocation proceedings. S. 552 proposes to create a division of psychiatry in the Department of Institutions. S. 559, to amend the workmen's compensation act, proposes to make compensable "any disease caused by and arising out of the particular employment during the period of which such disease manifested itself." A. 1159 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. It also proposes to create a public corporation to be known as the "Naturopathic Association of California," to be composed of all practicing naturopaths, which is given very broad powers. Naturopathic licentiates are to be given the same rights as licentiates of the medical practice act with respect to the making of "burial, death, birth, or marriage certificates," and are to be permitted to practice within the confines of any institution supported in whole or in part by public taxation. "Naturopathy is defined and hereby declared to include physiotherapy, physical therapy, phytotherapy, biochemistry, and the use of antiseptics, and more especially defined in detail as the science and art of applied therapeutics and prophylactic hygiene and sanitation which enables the naturopathic physician to direct, advise, prescribe, dispense or apply food, water, roots, herbs, plants, lights, heat, color, exercises, active and passive manipulation correcting vital tissue, organs or anatomical structure by manual, mechanical or electrical instruments or appliances, or any and all other natural agencies that have been used in the past, that are now in use, or that may be used in the future, to assist nature to restore a physiological and psychological interfunction for the purpose of restoring and maintaining a natural state of health, mentally and physically." A. 1277 proposes to regulate the operation of clinics and dispensaries and to require their licensing by the state board of public health. A. 1321 proposes to penalize any person who by radio or any other broadcasting means asserts any fact concerning the cure of any ailment by the use of any drug or therapeutic treatment, which is known by him to be untrue and is made with the intention of misleading. A. 1487 authorizes the director of institutions to establish the California Psychiatric Institute in San Francisco. The institute is to train physicians, psychiatrists, psychologists, nurses and the public in matters pertaining to mental health and to conduct research in the nature and treatment of mental and behavior disorders. S. 558, to amend the workmen's compensation act, proposes that the industrial accident commission, instead of directing an employee claiming compensation to be examined by a single physician, shall, on the request of the employer, direct the employee to be examined by a committee of physicians, composed of the physician attending the case, a physician named by the employer, and a physician named by the employee.

COLORADO

New Address for State Society. — The Colorado State Medical Society and its journal are now housed in improved quarters at 537 Republic Building, Denver. The journal reports that the society is now better able to serve its members.

Bills Introduced.—H. 151, to amend the optometry practice act, proposes to omit the prohibition in the present law against licentiates using the title "Doctor" and to eliminate also the requirement that licentiates use no other title than optician or optometrist. H. 582, to amend the law relating to chiropractic, proposes that a license to practice chiropractic shall not authorize a licentiate to practice surgery or obstetrics, to prescribe drugs or administer anesthetics, or to treat disease or morbid conditions of human beings in any manner other than by palpation, nerve tracing and adjustment of vertebrae by hand. A licentiate is to be permitted to use the title "Doctor of Chiropractic," "D.C." and "Chiropractor" in connection with his name, but is not to use any other title or abbreviation to indicate that he is engaged in the practice of the healing art. H. 653 and S. 541, to amend the laws relating to the practice of chiropractic, propose that applicants may not be licensed until they have been examined in anatomy and physiology by the state board of medical examiners and in the technic of chiropractic by a licensed chiropractor, selected by the board. H. 583 and S. 375 propose to make it the duty of every physician, nurse, midwife or other person, in charge at the birth of any infant or having the care of the infant after birth, to treat its eyes with a prophylactic, approved by the state board of health as soon as practicable after birth and always within one hour. If any redness, swelling, inflammation or gathering of pus appears in the eyes of an infant within two weeks after birth, then any person having care of the infant must report that fact to some licensed physician within six hours after discovery. H. 584 and S. 374 propose to require that all pupils and teachers be immune to smallpox before they attend or teach school. Immunity is to be evidenced either by having had smallpox, having been successfully vaccinated within five years, or having been vaccinated three times unsuccessfully. H. 784 proposes to abolish the division or department relating to venereal diseases, in the state board of health.

CONNECTICUT

Hospital News.—A new addition, to cost $500,000, will soon be started at St. Vincent's Hospital, Bridgeport; it will provide 100 additional rooms as well as more extensive operating and x-ray facilities.

Bills Introduced.—S. 76 proposes to repeal the present narcotic drug control act and to enact the uniform narcotic drug act. H. 1161, to amend the law requiring the annual registration of all practitioners of the healing art and of midwives and nurses, proposes to eliminate the fee now required in connection with annual registration.

GEORGIA

Institute of Citizenship.—At a joint meeting of the Institute of Citizenship and the Georgia Press Institute, at Emory University, Atlanta, February 7-11, "The Press and Public Opinion" was the general subject for discussion. Dr. Morris Fishbein, editor of THE JOURNAL, spoke on "Public Opinion on Problems of Health" and conducted a round table on the subject. The Institute of Citizenship was established at Emory University for the dissemination of knowledge of public affairs. The Georgia Press Institute, established by the Georgia Press Association, was designed to assemble newspaper men and women, teachers and students of journalism, leaders in public affairs and others for lectures and conferences on subjects of interest to the press.

IDAHO

Bill Introduced.—H. 76 proposes a new osteopathic practice act. Licentiates are to be granted the "right to practice the healing art as it is taught and practiced in recognized colleges of osteopathy." They are to be permitted to perform major surgery if they present proof that they have served

internships of one year in hospitals of standards acceptable to the board of osteopathic examiners and satisfactorily pass an examination to be given by that board. All osteopathic licentiates are to "have the same rights as physicians of other schools of medicine with respect to the treatment of cases or holding offices in public institutions or municipalities."

ILLINOIS

Bill Introduced.—H. 225 proposes that all contracts of companies doing business in Illinois, insuring against bodily injury, disablement or financial loss, resulting from accidents, shall authorize the insurer to pay all claims of hospitals and physicians directly to them instead of to the injured person to whom such hospital and medical services have been rendered because of such accidents.

Dr. McClanahan Honored.—The Warren County Medical Society held a special meeting in Monmouth, January 19, in honor of Dr. James M. McClanahan, Kirkwood, who has completed fifty-nine years of practice. More than 100 physicians from western Illinois and eastern Iowa attended. Eight physicians who had practiced fifty years or more were guests of the society: Henry B. Young, Burlington, Iowa; Frank B. Dorsey, Keokuk, Iowa; Julian E. Camp, Augusta; James E. Coleman, Canton; Isaac F. Harter, Stronghurst; Edmund B. Montgomery, Quincy; William W. Williams, Quincy, and Joseph B. Bacon, Macomb. On behalf of the society, Dr. Harry L. Kampen, Monmouth, presented to Dr. McClanahan a watch and an engraved book, autographed by those present. Dr. Ralph Graham, Monmouth, president of the Warren County Medical Society, presided.

Chicago

Dr. Martland to Give Hektoen Lecture.—Dr. Harrison S. Martland, chief medical examiner for Essex County, New Jersey, will deliver the ninth Ludvig Hektoen Lecture of the Institute of Medicine of Chicago, February 24, in the Chicago Woman's Club Hall, 72 East Eleventh Street. His subject will be "Recent Progress in the Medicolegal Field in the United States."

Dr. Pusey to Give Gehrmann Lectures.—Dr. William Allen Pusey, emeritus professor of dermatology, University of Illinois College of Medicine, will deliver the Adolph Gehrmann Memorial Lectures at the Research and Educational Hospital of the college, March 1-3, on "History and Epidemiology of Syphilis." The subtitles of the lectures will be "History of Syphilis," "Development of Knowledge of Syphilis" and "Epidemiology of Syphilis." A dinner in honor of Dr. Pusey has been arranged by the university, to be given at the Palmer House, March 2.

KANSAS

Bills Introduced.—S. 239 and H. 349 propose that in the distribution of the funds of a decedent's estate, hospitalization expenses during the last illness and funeral expenses shall have priority over all other claims. Claims on account of medical services are to be subordinate to the claims noted but are to be coordinate with wages due servants and the expenses of administration and precede all other claims.

MAINE

Bill Introduced.—H. 1013 proposes to create a state board for the practice of hairdressing and cosmetic therapy and to regulate those practices. Licentiates are to be authorized, among other things, "to remove superfluous hair from the body of any female person," the method to be employed being left apparently solely to the judgment of the licentiate.

MARYLAND

Dinner to Dr. Kelly.—Dr. Howard Atwood Kelly, Baltimore, will be guest of honor at a dinner given at the Lord Baltimore Hotel by his friends, February 20, in celebration of his seventy-fifth birthday. Dr. Kelly is professor emeritus of gynecology at Johns Hopkins University School of Medicine. He has been connected with the institution since 1889.

Bills Introduced.—H. 57 proposes to repeal the law regulating the possession and distribution of narcotic drugs and to enact the uniform narcotic drug act. S. 54 proposes to require practitioners of medicine, dentistry, chiropody, chiropractic, optometry and osteopathy to pay annual license fees of $15 to the clerk of the circuit court of the counties in which they reside and, if in Baltimore, to the clerk of the court of common pleas.

Dr. Macleod Gives Herter Lectures.—Dr. John J. R. Macleod, regius professor of physiology, University of Aberdeen, and visiting professor of physiology, Johns Hopkins University School of Medicine, Baltimore, gave the twenty-first course of lectures under the Herter Foundation. Dr. Macleod spoke on "Control of Carbohydrate Metabolism," January 23 and 25, and on "The Nervous System and Carbohydrate Metabolism," January 27.

MASSACHUSETTS

Lectures on Mental Hygiene.—The state division of university extension and the Massachusetts Society for Mental Hygiene are conducting the following courses in mental hygiene, each to consist of eight lectures:

Boston, beginning February 6, Human Relations and Mental Health.
Brockton, beginning January 19, Personal and Social Aspects of Mental Hygiene.
Leominster, beginning February 7, Mental Hygiene of Childhood and Adolescence.
New Bedford, beginning January 20, Mental Hygiene of Childhood and Adolescence.
Newton, beginning January 24, Understanding the Child.

Cholecystitis of Typhoid Origin Reportable.—To give local boards of health jurisdiction over typhoid carriers, the state department of health declared cholecystitis a reportable disease, Dec. 13, 1932. According to the state health officer, it was felt that the statutes as they were drawn could not be interpreted to refer to typhoid carriers. As a high proportion of carriers have a demonstrable pathologic condition of the gallbladder, it was felt that it was reasonable to assume that all these carriers had in reality a cholecystitis of typhoid origin. The action of the department was prompted by the existence of two carriers who refused to cooperate in any attempt to prevent further spread of their infection and who had caused repeated infection of their associates. Under the new ruling, local boards of health may adopt rules and regulations for the restriction or quarantine of such carriers.

Health at Fall River.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended February 4, indicate that the highest mortality rate (22.6) appears for Fall River, and the rate for the group of cities as a whole, 12.1. The mortality rate for Fall River for the corresponding period last year was 14.1, and for the group of cities, 11.8. The annual rate for eighty-five cities for the five weeks of 1933 was 12.9 as against a rate of 12 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

MICHIGAN

Bill Introduced.—H. 184 proposes to levy on practitioners of the healing art annual occupational taxes of 3 per cent of the balance remaining after subtracting $4,800 from gross professional income.

Roentgen Apparatus Installed.—An x-ray machine which will generate 1,500,000 volts of electricity, making it the largest apparatus of its kind on this continent, was being installed in Harper Hospital, Detroit, at a cost of $50,000, according to the Detroit *Times*, January 9. Its ray will have a potency of 725,000 volts. The equipment consists of a "cascade" of six caskets on porcelain-insulated legs, containing a series of thirteen transformers which will raise the regulation 110 volt Edison current to 1,500,000, and twelve condensers and rectifiers which will deliver a current at a constant potential of 725,000 volts to the tube. The tube will serve two patients at once, one directly in front of it and one underneath. Kenneth E. Corrigan, Ph.D., is the physicist in charge.

MINNESOTA

Bill Introduced.—S. 595, to amend the workmen's compensation act, proposes to add to the list of compensable occupational diseases carbon monoxide poisoning, dermatitis or any skin affliction, and silicosis or pneumonoconiosis.

MISSOURI

Bills Introduced.—H. 238 proposes to authorize the sterilization of certain socially inadequate inmates of state institutions. H. 282 proposes to accord to physicians and hospitals treating persons injured in accidents liens on any claims, rights of action, or moneys to which the injured persons may be entitled from the persons whose fault or negligence caused such injuries or from any insurer of the negligent persons or from any insurer of the injured persons. The lien, however, is not to attach to any claims arising under the workmen's compensation act.

MONTANA

Bill Introduced.—S. 76 proposes to make it the duty of all physicians and other practitioners of the healing art who examine or treat a person with any disease declared reportable by the state board of health to report the fact to the county or local health officer having jurisdiction of the territory in which the case is found.

NEBRASKA

Society News.—Dr. Philip L. Romonek, Omaha, among others, addressed the Madison Six-County Medical Society, Stanton, in December, on "Reeducation of the Voice Following Complete Laryngectomy."

Bills Introduced.—S. 193 proposes that actions for malpractice may be brought only within one year from the date of the occurrence of the malpractice. S. 243, to amend the laws relating to the practice of chiropractic, proposes (1) to exempt chiropractic applicants from examination by the basic science board and (2) to define chiropractic as "that system which teaches that disease is caused by interference with the transmission of nervous energy and that health is restored by locating and removing such interference."

NEW HAMPSHIRE

Bill Introduced.—H. 294 proposes a new workmen's compensation act. Employees are not to be compensated for occupational diseases, except anthrax, lead poisoning, silicosis or diseases due to inhalation of poisonous gases. An employer is to furnish reasonable medical, surgical and hospital services and supplies to an injured employee during the first four weeks of disability. The industrial accident board may require an employer to furnish medical services for a period exceeding four weeks.

NEW JERSEY

Practical Lectures.—The Jersey City Medical Center is offering during February the following series of practical lectures on Friday afternoons:

Dr. John J. Moorhead, New York, Practice of Traumatic Surgery.
Dr. Wells P. Eagleton, Newark, How to Examine Cases of Fracture of the Skull and Their Immediate Treatment.
Dr. Frederick C. Holden, New York, Obstetrics and Gynecology.
Dr. Chevalier Jackson, Philadelphia, Hoarseness.

Society News.—Dr. William D. Stroud, Philadelphia, discussed treatment of heart disease at the December meeting of the Gloucester County Medical Society, Woodbury.——Dr. Walter L. Niles, New York, addressed the Passaic County Medical Society, Paterson, Dec. 8, 1932, on diagnosis and treatment of kidney diseases.——Dr. George T. Pack, New York, addressed the Paterson Clinical Society, Paterson, January 19, on "Indications for Surgery and for Radium in Treatment of Cancer."

Bills Introduced.—A. 106, to supplement the medical practice act, proposes to limit appointments to the board of medical examiners to persons whose names are submitted by the medical society of New Jersey. The bill also states the reimbursement and compensation to be paid members of the board and the method and distribution of the funds acquired by the board. A. 146 proposes that public school teachers may be subject to thorough physical examinations on orders from the proper boards of education. If the examinations show the existence of communicable diseases, the teachers are to be ineligible for further service until satisfactory proof of recovery is furnished. A. 144 proposes a thorough medical examination as a condition precedent to admission to state normal schools and teachers' colleges or to eligibility for teachers' certificates.

NEW YORK

Licenses Stolen.—Dr. Virginia Murray Palmer, Scarsdale, N. Y., recently reported that her licenses to practice medicine in New York and in California had been stolen from her automobile. Dr. Palmer is a 1917 graduate of Stanford University School of Medicine, California.

Bill Passed.—S. 142, proposing to amend the medical practice act so as to permit the board of regents to restore a license to a person whose license has been forfeited by conviction of a felony, if such person is pardoned by the governor or by the President of the United States of the felony of which he was convicted, has passed the Senate.

Bills Introduced.—S. 623 and A. 784 propose to authorize the certification of qualified psychiatrists by a board of examiners in the mental hygiene department. The board is to be composed of the Commissioner of Mental Hygiene, the Commissioner of Correction, and the head of the Department of Psychiatry of a medical college in the state. The board is to grant certificates to qualified persons, who must be physicians with five years' experience in practice and who have had three years' full time practice in institutions for mental defectives or have devoted five years to a practice confined wholly to the care of persons suffering from nervous and mental diseases. A. 772 proposes to make it unlawful to distribute bichloride of mercury in tablet form, except in the form of tablets of distinctive shape and color, labeled "poison" on each tablet, and in bottles of a distinctive shape and color, conspicuously labeled "poison," in red letters. S. 673, to amend the pharmacy practice act, proposes that every place in New York City in which drugs, chemicals, medicines, prescriptions or poisons are retailed or compounded shall be deemed a pharmacy, within the meaning of the act, and be under the personal supervision of a registered pharmacist.

New York City

Bulletin Becomes a Quarterly.—The *Weekly Bulletin* of the New York City Department of Health was discontinued as a weekly publication with the issue of Dec. 31, 1932, and will henceforth appear quarterly. The bulletin had appeared in its present form since 1913, and has been edited by Dr. Charles F. Bolduan since Feb. 1, 1914.

Society News.—A symposium on surgery was presented before the International and Spanish-Speaking Association of Physicians, Dentists and Pharmacists, January 20, by Drs. Dean Lewis, Baltimore, President-Elect, American Medical Association; Robert H. Ivy, Philadelphia; Fred H. Albee, John J. Moorhead and Jacob M. Gershberg. At the recent annual meeting Dr. Gershberg was elected president and Dr. Reginald Burbank, general secretary. Drs. Albee, Sigmund Freud of Vienna, and Juan Sacasa, president of Nicaragua, were elected vice presidents. This society now has branches in seventeen foreign cities.——Dr. Burrill B. Crohn, Brooklyn, gave the ninth Friday afternoon lecture of the New York Academy of Medicine, January 20, on "Indications for Conservative Treatment of Gallbladder Disease."——Dr. Carl Boettiger addressed the Medical Society of the County of Queens, January 20, on "Treatment of Anemia as Influenced by Recent Advances in Hematology."

NORTH CAROLINA

Bill Introduced.—H. 268 proposes to authorize the state board of health to promulgate and enforce rules and regulations governing the practice of midwifery in the state and to prohibit persons from practicing midwifery unless licensed by the board.

NORTH DAKOTA

Bills Introduced.—S. 138, to amend the dental practice act, proposes, among other things, to authorize dentists to sign death certificates. H. 117, to amend the chiropractic practice act, proposes to require applicants for licenses to practice chiropractic to be graduates of standard high schools, to have two years of university work, and to have graduated from colleges of chiropractic wherein the resident course of instruction is not less than three years of eight months each. The bill seeks to permit licensed chiropractors to adjust any displaced tissue of any kind or nature and to practice physiotherapy, electrotherapy and hydrotherapy as taught by chiropractic schools and colleges, but not to prescribe for or administer any medicine or drug, included in materia medica, to be taken internally, nor to perform any surgery, nor to practice obstetrics, nor to use the title physician or surgeon. S. 169 proposes to give hospitals that are supported in whole or in part by private charity and treat patients injured through the fault of other persons, liens on all rights of action, claims, judgments, settlements or compromises accruing to the injured persons because of their injuries.

OHIO

Hospital News.—Four new buildings and two additions to former structures were completed and opened for use at the Veterans' Administration hospital at Chillicothe, Ohio, Nov. 17, 1932. The hospital's capacity was increased from 650 to 850 by the additions, which represent an outlay of $600,000.

Bills Introduced.—S. 135, to amend the optometry practice act, proposes to require licentiates to practice only in their own names and to forbid them from having professional connection with any person, firm, partnership, association or corporation which holds itself out as offering optometric services or facilities. S. 129 proposes to create a board of barber examiners and to regulate the practice of barbering, but the application of cosmetic preparations, antiseptics, powders, oils, clays or lotions to a scalp, face or neck for the treatment of physical or mental ailments or diseases shall not constitute the practice of barbering.

Dr. Sawyer Honored. — Colleagues of Dr. John Pascal Sawyer, professor emeritus of therapeutics and clinical medicine at Western Reserve University School of Medicine, Cleveland, gave him a testimonial dinner at the Union Club, Dec. 14, 1932. Speakers of the evening were Dr. Torald H. Sollmann, Frederick C. Waite, Ph.D., Dr. John Dickenson and Rev. C. H. LeBlond, director of Catholic Charities of Cleveland. Winfred G. Leutner, Ph.D., acting president of Western Reserve University, was toastmaster. Dr. Sawyer became instructor in physiology at the university in 1888, two years after his graduation, and served in various capacities until June, 1932, when he resigned. He was a member of the staff of Charity Hospital for thirty-seven years.

OKLAHOMA

Bill Introduced.—S. 208 proposes a new workmen's compensation act. Occupational diseases are not to be compensable. An employer is to provide an injured employee with such medical, surgical or other attendance or treatment, and nursing and hospital services as may be necessary during fifty days after the injury, and for such time thereafter as in the judgment of the state industrial commission may be required, but not to exceed $500 in cost. An employee is to be permitted to choose his own physician only when the employer fails or neglects to provide a physician within a reasonable time after knowledge of the injury.

OREGON

Bills Passed.—S. 127, to prohibit the dispensing of drugs to the public by means of automatic vending machines, has passed the senate. H. 263, proposing to create a board of dental hygiene examiners to regulate the practice of dental hygiene and to authorize such licentiates "to remove calcareous deposits, accretions and stain from the exposed surface of teeth, and to prescribe and apply any ordinary wash or washes of a soothing character, but not to perform any operation on the teeth or other tissues of the oral cavity," has passed the house. H. 127, proposing that all applicants for licenses to practice medicine, osteopathy, chiropractic, naturopathy or any other system of the healing art, as a condition precedent to examination by their respective licensing boards, be examined in physiology, anatomy, pathology, chemistry and hygiene by a state board of higher education, has passed the house.

Bills Introduced.—H. 361, to amend the workmen's compensation act, proposes to permit employers, with the approval of the industrial commission, to enter into contracts for the furnishing of first aid, transportation, medical and surgical attendance and hospital accommodations to injured employees, at the expense of the industrial accident fund. The industrial commission is to be authorized to formulate a standard form of contract and to establish rates to be paid under it. S. 124, to amend the workmen's compensation act, proposes that "no claim for medical or surgical attendance, hospital accommodation . . . shall be allowed . . . unless the claim shall have been filed with the (industrial accident) commission within three months after the completion of such service." S. 159 proposes to create in the state department of agriculture a division of public health which is to be invested with and succeed to all the powers and duties now exercised by the state board of health.

PENNSYLVANIA

Bill Introduced.—S. 224 proposes to authorize the department of public instruction to license qualified persons to practice chiropody or podiatry. "Chiropody or podiatry . . . is the diagnosing, medical, surgical and mechanical treatment of all ailments of the human foot, except the correction of deformities requiring the use of the knife, amputation of the foot, or toes, or the use of any anesthetic other than local. Chiropody or podiatry shall not be construed to include the fitting, recommending or sale of corrective shoes, arch supports or similar mechanical appliances by retail shoe dealers."

Society News.—Drs. William F. Herron and William S. McEllroy, among others, addressed the Pittsburgh Academy of Medicine, January 24, on "Recent Studies with Liver Extract in Pernicious Anemia."——Dr. William H. Guy addressed the Pittsburgh Pediatric Society, February 10, on "Management of Infantile Eczema and Nevi."——Drs. Marc W. Bodine, Williamsport, and Ross K. Childerhose, Allenwood, addressed the February meeting of the Lycoming County Medical Society, Williamsport, on "Some Aspects of Thyroid Disease" and "Pneumonoconiosis and Its Relationship to Pulmonary Tuberculosis," respectively.——Dr. Joseph H. Barach, Pittsburgh, addressed the Columbiana County Medical Society, January 10, on "Essential and Malignant Hypertension."

Philadelphia

Thomas Memorial Lecture.—The annual B. A. Thomas Memorial Lecture of the Philadelphia Urological Society was delivered by Dr. Frank Hinman, San Francisco, January 23, on "The Pathogenesis of Hydronephrosis."

Gerhard Medal Awarded.—The William Wood Gerhard Medal of the Pathological Society of Philadelphia was awarded to Dr. Frank C. Mann, Rochester, Minn., at a meeting of the society, February 9. Dr. Mann delivered an address on "Experimental Pathology and Pathologic Physiology of the Liver."

Session on Medical Economics.—The Philadelphia County Medical Society held the second session of the year devoted to medical economics, February 8. The following program was presented:

Dr. Iago Galdston, New York, Medical Economics and the Medical Information Bureau of the New York Academy of Medicine.
Ambrose Hunsberger, Ph.G., Pharmacy Endorses Medical Control of the Field of Medical Care.
Dr. Edward A. Schumann, Relation Between Hospital Managers and Staff Members.
Dr. James D. Schofield, Hospital Contract Practice.
Dr. Leonard Averett, Socialized Medicine in Germany and Austria.

SOUTH CAROLINA

Bill Introduced.—S. 161 proposes to authorize the sexual sterilization of certain insane, feebleminded and epileptic persons, and of idiots and imbeciles, when inmates of state institutions.

SOUTH DAKOTA

Bill Introduced.—H. 76 proposes to accord to physicians, nurses and hospitals, caring for persons injured through the fault of another, liens on the claims and causes of actions and judgments or settlements accruing to the injured persons on account of such injuries.

TEXAS

Bill Introduced.—H. 92 proposes to abolish the division of child welfare in the board of control and to assign its duties to the state board of health.

WASHINGTON

Bills Introduced.—H. 196 proposes to accord physicians, nurses and hospitals, treating persons injured through the fault of another, liens on all claims, rights of actions or money to which the persons injured are entitled because of their injuries. S. 178 proposes a new medical practice act differing radically from the present act. A board of examiners of nine members is to operate independently of the director of licenses, in examining and licensing applicants and in revoking licenses.

WEST VIRGINIA

Bills Introduced.—H. 158 proposes that every child entering a public or private school for the first time be examined by a licensed physician to ascertain whether the child is suffering from any communicable disease or any defect. H. 269, to amend the medical practice act, proposes that the provisions of the act "shall not be construed to apply to persons treating human ailments by prayer or spiritual means, as an exercise or enjoyment of religious freedom." H. 162, to amend the workmen's compensation act, proposes to make compensable silicosis "among employees on sand mines."

WISCONSIN

Personal.—Dr. Kate Kelsey Clark, Cable, was the guest of honor at a community dinner, Dec. 20, 1932, at which she was presented with a radio. She is said to have practiced in the district thirty years.

Hospital News.—Stark Hospital, a new part of the Milwaukee Children's Hospital built from a fund of $125,000 left in trust by Mr. Charles G. Stark, who died in 1908, was recently opened. Mrs. Stark, who died in 1927, left $63,000 for maintenance of the hospital.

Medical Building Dedicated. — The Harriet L. Cramer memorial building of the Marquette University Medical School, Milwaukee, was dedicated, January 4. Dr. William Gerry Morgan, dean, George Washington University School of Medicine, Washington, D. C., and Richard E. Scammon, Ph.D., dean of medical sciences, University of Minnesota, were the principal speakers.

WYOMING

Bill Introduced.—S. 81, to amend the medical practice act, proposes to increase from $25 to $50 the fee required of applicants for licenses to practice medicine or osteopathy.

GENERAL

Medical Bills in Congress.—*Change in Status:* The War Department appropriation bill, H. R. 14199, has been reported to the Senate. The Senate Committee on Appropriations recommends that the provision inserted by the House of Representatives, forbidding further enrolments in medical, dental and veterinary units in the Reserve Officers' Training Corps, be stricken out. If the Senate sustains its committee, the matter will be adjusted in the conference committee of the Senate and the House.

Heart Disease Heads the List.—Provisional figures on deaths in the United States in 1931, announced by the Bureau of the Census, January 26, show that there were 1,322,587 deaths, or a death rate of 1,107.5 per hundred thousand of population. This is a decrease from 1930, when there were 1,343,356 deaths, a rate of 1,133.1 per hundred thousand. The five leading causes of death were: diseases of the heart, from which there were 253,985 fatalities; cancer, 118,141; nephritis, 104,119; cerebral hemorrhage, 99,376, and pneumonia, 96,975. The figures for heart disease and cancer were slightly larger than those for the preceding year. There were 31,701 deaths from influenza in 1931, compared with 23,066 in 1930. Deaths from automobile accidents amounted to 30,042, with 1,651 additional fatalities from train and automobile collisions and 419 from street car and automobile collisions.

Society News.—The tenth annual meeting of the American Orthopsychiatric Association will be held in New York at the Hotel Pennsylvania, February 23-25. Among speakers listed on the program are:

Edgar A. Doll, Ph.D., Vineland, N. J., Birth Lesion as a Category of Mental Deficiency.
Dr. Matthew Molitch, Jamesburg, N. J., and August K. Eccles, Serum Calcium in Juvenile Delinquents.
Dr. Joseph J. Michaels, Boston, and Miss Sylvia E. Goodman, Incidence and Intercorrelations of Enuresis and Other Neuropathic Traits in So-Called Normal Children.
Dr. Lawson G. Lowrey, New York, Treatment of Behavior Problems.
Dr. David Levy, Use of Play Technic as Experimental Procedure.

Dr. Ira S. Wile, New York, is president of the association and Dr. George S. Stevenson, New York, secretary. The third annual conference of training school psychiatrists and psychologists will be held on the two days preceding this meeting.

Western Hospital Meeting.—The seventh annual meeting of the Western Hospital Association will be held in Long Beach, Calif., February 22-25. The tentative program includes as speakers Drs. George F. Stephens, Winnipeg, Manit., on "Inevitable Changes in the Hospital World"; Benjamin Black, Oakland, Calif., "Relative Responsibility of Voluntary and Tax-Supported Hospitals," and Rev. Robert E. Warner, Spokane, "Practical Suggestions for the Economic Relief of Hospitals." The Friday afternoon session will be a symposium on hospital and medical service for persons of limited means, sponsored jointly by the California Medical Association and the Western Hospital Association. The speakers will be Mr. R. D. Brisbane, Sacramento, and Drs. Walter M. Dickie, Berkeley; George G. Reinle, Oakland; Lyell C. Kinney, San Diego; Paul A. Quaintance, Los Angeles, and John H. Graves, San Francisco.

Future Costs of Veterans' Benefit.—Estimates of future expenditures for war veterans under existing laws will reach a peak in 1958 with a total of $1,081,200,000, according to computations presented to the congressional committee studying veterans' relief laws, January 23, by Brig. Gen. Frank T. Hines, administrator of veterans' affairs. Of this amount, $133,100,000 will be needed for hospitalization and domiciliary care. An artificial peak will be reached in 1945 because of the payment of adjusted service certificates which will become due in that year. Another computation based on anticipated changes in laws in keeping with past experience was also presented by General Hines showing that under those conditions the peak will come in 1950, aggregating approximately $1,913,400,000. General Hines called attention to the danger of attempting to estimate costs in this manner beyond a period of five or ten years, as the many factors involved make such projections highly speculative. The administrator recently recommended to the committee that the government reduce the annual expenditures by extending present hospital units instead of constructing new hospitals; he estimated that this policy would save approximately a billion dollars over a period of thirty-three years. Among other changes, General Hines recommended withdrawal of disability allowances and compensation for veterans not 50 per cent disabled; revision of the law permitting retroactive awards on compensation and of the emergency officers' retirement act to eliminate persons without six months' service and who were not actually injured or diseased in service.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 21, 1933.

Sir Robert Jones

Sir Robert Jones, the orthopedic surgeon, has died at Llanfairfechan, Wales, at the age of 74. Born at Rhyl, in the same country, he was educated at the Universities of Edinburgh and Liverpool and was apprenticed to his uncle Hugh Owen Thomas, a general practitioner in Liverpool with a bent for orthopedics, derived from his father, who was a bone setter. Thomas had no hospital appointments, but he had a most original mind and high manipulative skill. While the surgeons of his day were treating tuberculous joints with the knife, he showed that prolonged rest, obtained by means of the splints which he manufactured himself, would give much better results. His name is immortalized in "Thomas's splint." Jones, the pupil and successor of Thomas, soon showed himself another great pioneer in orthopedics. He was appointed surgeon to two Liverpool hospitals. He maintained his uncle's practice of a free clinic at his house on Sundays for poor persons suffering from injuries and deformities, and in time it became a Mekka for the surgeons of the world. Great as a clinician, Jones was still greater as a teacher. He had all the qualities of his uncle —an extraordinary grasp of principles, great lucidity in expounding them, and remarkable inventiveness in devising apparatus. Perhaps his best work was done in the surgical treatment of infantile paralysis, in which he showed that much better results could be obtained by preventing, by means of splinting, the weakened muscular groups from being stretched by their stronger opponents, from the moment of the disappearance of acute symptoms. Thus the paralytic disabilities and deformities, which were so common, would be rendered comparatively rare. As in the case of Lister, his fame spread more rapidly in other countries, and particularly in America, than in England. Eventually he was regarded by all as the supremely great orthopedic surgeon and teacher.

HIS WAR WORK

In 1913 he was president of the orthopedic section of the International Congress of Surgeons, held in London. When the war came he was presented with a great opportunity for extending his activities. He recognized that the treatment of gunshot and other skeletal injuries left much to be desired. The victims of ununited or malunited fractures poured into this country and were scattered in the hospitals and depots all over the country. He brought about their segregation into specially staffed and specially equipped centers. The first center was established at Shepherd's Bush (London). Here, with the help of enthusiastic assistants, many of them Americans, he did great work. These orthopedic centers eventually had 30,000 beds. As a fruit of the experience gained in them there was published three years after the war the "Orthopaedic Surgery of Injuries," which Jones edited while it was written by his colleagues at the centers. In the preface he wrote: "The orthopedic surgeon should be governed by sound surgical principles and not become entangled in detail. Function is his goal, and he should know, and be able to practice, the best way of obtaining it. The operation means to him only the beginning of his problem, and his most brilliant exploit, unless directed to a functional success, should be a reproach." He arranged conferences of surgeons at the various centers so that the knowledge of all could be pooled. His orthopedic friends in America, particularly Goldthwait and Osgood of Boston, so appreciated him that they "lent" him twenty-five American surgeons even before the United States came into the war.

During the war the British Orthopaedic Association was founded on the initiative of Jones and Osgood. Jones was its president from 1920 to 1925. One of his great triumphs was the introduction of the Thomas splint for the first aid treatment of fractures of the femur on the battlefield. This measure reduced the mortality considerably and has now been adopted in civil ambulance work.

BENEFACTOR OF INJURED AND CRIPPLED

After the war he was the leader in the formation of the Central Committee for the Care of Cripples, an organization devoted to local county orthopedic treatment, for which he lectured and toured unceasingly. As a surgeon he was unsurpassed in technic and clinical judgment, yet he had little use for the operation except as a means to an end. His delight was the dissemination of his great experience and knowledge, by both the spoken and the written word. The numerous papers from his pen were written on Sunday afternoons when he had some time to spare, he said. There is scarcely an operation or treatment in orthopedic surgery in which he has not established a classic method. He was the founder of orthopedic surgery as it exists in England today. His most important book, written in conjunction with Lovett of Boston, was a "Textbook of Orthopaedic Surgery." He also wrote the section on orthopedic surgery in Binnie's "Surgery." Fluent in speech, he had a magnetic personality, radiating kindness to all—colleagues, pupils and patients. On his seventieth birthday his friends entertained him and presented him with the "Robert Jones Birthday Book." In the preface, Lord Moynihan wrote: "Few men have ever possessed in so radiant a degree the genius for friendship. No one can be long in his company without realizing the sweet simplicity of his character and the greatness of his heart." Truly a great and much beloved teacher has passed away, whose name has been placed beside those of Lister and of Ross. It is true that he did not, like these great men, make a striking discovery, but he raised the whole level of orthopedic surgery far above where he found it and so became the benefactor of the injured and the crippled all over the world.

The British Medical Association and Medical Education

In previous letters, the discussion going on with regard to medical education has been reported. The main criticism is that the medical curriculum is overloaded. The British Medical Association has decided to take a hand in the discussion, on the ground that, composed as it is of men engaged in every branch of medical practice, it could make a unique contribution. "The gaps between the education of the medical student and the realities of his professional life can be closed only with the help of those who have the advantage of the considered opinion of the bulk of general practitioners." It is proposed to set up a special committee to report on (1) the conditions required for entrance on medical studies; (2) the content of the curriculum, the position of the various subjects and their proper relation to one another; (3) the nature of the examination and other tests that should be satisfied prior to graduation; (4) whether, and to what extent, postgraduate education or experience should be required prior to practice.

The following questionnaire has been drawn up for circulation among the members of the association. 1. Should the registration age of medical students be raised to 18 years? 2. Should the standard of educational requirements for registration be higher? 3. Ought general biology be a compulsory subject for instruction and examination before entry on medical studies? 4. Are the preregistration instruction and examination in physics and chemistry conducted on right lines? Is the instruction directed too much to technical detail and not primarily to scientific principles? 5. In what way can instruction in physics, chemistry and biology in their application to medicine be best conducted? 6. What improvements in the teaching of anatomy and physiology would make their application to clinical studies more practical? 7. When and for how long in the curriculum should such subjects as materia medica, pharmacology, forensic medicine and general pathology be best taken? 8. How early in the curriculum should clinical work begin and what should be its character at this stage? 9. Ought the teaching of preventive medicine be given a separate place in the curriculum, or is it sufficient that the preventive aspects be emphasized throughout the general teaching? 10. How far should some clinical experience be introduced into the first two (or three) years of the curriculum? 11. Should disease in children (including infant hygiene) be made a separate subject in the curriculum? 12. What limits should be placed on the teaching of operative surgery in the undergraduate curriculum? 13. How far should the special subjects—public health, psychologic medicine, ophthalmology, otorhinolaryngology, dermatology, and so on—be carried on in the ordinary curriculum? 14. Are any changes needed in the teaching of the main subjects of medicine, surgery, obstetrics and gynecology? 15. Should there be any systematic instruction in the conduct of practice or in medicopsychologic questions? 16. How can facilities be best afforded for the use in medical education of the clinical material in special and municipal hospitals? 17. Ought there to be single-portal examination for registration as a qualified physician? 18. Should there be a further period of, say, one year after passing a qualifying examination as resident medical officer in an institution or hospital or as assistant to a physician in practice before full license to practice? 19. Any further requirement as to postgraduate work?

PARIS

(From Our Regular Correspondent)

Jan. 4, 1933.

Selecting a Site for New Faculty Buildings

The Faculté de médecine de Paris, having often complained of its cramped quarters, which in view of the constantly increasing number of students have become inadequate, received from the Rockefeller Foundation the offer of a gift of $6,000,000 for the construction of a new Faculté de médecine, on condition that the French government furnish an equal sum. It was impossible to erect the new buildings on the present site along the Boulevard St. Germain, in the center of Paris, where real estate commands an enormous price. When a different site was sought, consideration was given to the site occupied by the Halle-aux-vins, on the bank of the Seine farther to the east. The Halle-aux-vins in that case would have been moved outside the city. The wine merchants refused to move. Attention was then given to a large unoccupied area south of the city, which was being used for a military aviation school. The suggestion of this site brought protests from the professors, students, medical libraries, and the dealers in surgical instruments that had been grouped for centuries about the present Faculté de médecine. This site was several miles away from the principal teaching hospitals. Attention was then given to a tract occupied by the Ste. Anne psychopathic hospital, located to the south in the vicinity of the University City. It was not long before protests were heard. Professors think the location is still too remote, and their opinion is shared by the merchants. Furthermore, it would be necessary to rebuild a much larger psychopathic hospital elsewhere; for it is now inadequate, owing to the increasing number of insane persons. The council of the Faculté de médecine is placed in an embarrassing position by the gift of the Rockefeller Foundation, especially in view of the state of the French treasury. The present buildings of the Faculté de médecine are only fifty years old, and it would suffice to add further stories or erect annexes. In short, the council appears disposed to postpone until more

propitious times the realization of the generous proposal of the great American philanthropist. Attention has been called also to the fact that at Lyons the magnificant university buildings erected with the same aid but located too far from the center of the city are already revealing grave disadvantages by reason of their remoteness. The students are attending their lectures less regularly on account of the time required to go to and fro.

The Origin of Lichen Planus and Psoriasis

The Société des médecins des hôpitaux de Paris was interested recently in two original communications by Jausion and Guillaud-Vallée, who have established through a large number of observations that all persons affected with lichen planus or with psoriasis present the reactions of a mycotic allergy. The coexistence of an epidermophytosis and even of a trichophytosis is not rare in such patients. Lichen buccalis is produced by any contact of the mucous membrane with the mycelian antigen. The tricho-epidermophytic skin reaction was found to be positive in all cases of cutaneous, mucosal or mixed lichen examined by Jausion thus far. All the patients were either cured (nineteen) or greatly improved (two) by injections of a polymycotic vaccine. The same observations were made with respect to psoriasis in the large majority of cases examined by Jausion. Fifty-four cases were carefully observed. Thirty-seven (68 per cent) of these patients were, at the same time, carriers of inguinal epidermophytosis or mycotic intertrigos; forty-four (80 per cent) reacted strongly positively to a mycotoxin; forty-five of these cases of psoriasis yielded to mycovaccinal treatment. Twenty-nine patients were completely cured by means of the polymycotic vaccine alone, after a long period of treatment (from fifty to seventy intramuscular injections; entirely painless, however, and without any general reaction). Thus psoriasis often manifested itself as a mycosid but more often as an epidermophytid. Other antigens may, nevertheless, be a factor (streptococcic toxin). But parakeratosis psoriasiformis is always sterile. Psoriasis is, then, a cutaneous reaction, something like the response of a parakeratosic diathesis to various antigens, chiefly of mycelian origin. That explains why it may disappear as a result not only of chemotherapy but also of specific vaccine therapy (polymycotic vaccines).

BERLIN

(From Our Regular Correspondent)

Jan. 2, 1933.

Blood Tests to Establish Paternity

At a recent session of the Berliner Medizinische Gesellschaft, three speakers addressed the assembly: Dr. Fritz Schiff, director of the bacteriologic department of the Krankenhaus Friedrichshain; Professor Müller-Hess, director of the University institute for Legal Medicine, and Prof. E. Unger, surgeon to the Rudolf Virchow-Krankenhaus.

Schiff discussed the general basis of the theory of the blood groups, as it was set up by Landsteiner, twenty-five years ago. Of the specific characters of the blood, only four were known until recently, although these four have been found also in other body fluids, such as gastric juice and saliva; that is of criminologic importance, as Müller-Hess brought out later, since the blood groups can be ascertained from the cigaret stubs of suspected persons. Recently three other specific characters of the blood have been discovered. Two of these—termed M and N—are serologically sharply distinguishable characters, which are fully developed in the new-born and are subject to precise "laws" of hereditary transmission. The serologic paternity test can now eliminate every third man wrongly charged with being the father of a given child, whereas formerly only every sixth man could be eliminated. In case of a mix-up of children or wilful substitution of children, in two out of three cases a serologic examination is now practical. For blood transfusion the new factors have no importance, if it is a question of a first transfusion. But in the case of repeated transfusions the new method may aid in avoiding unpleasant reactions.

Müller-Hess emphasized that the law does not compel a person to submit to a blood test. The government of the Free State of Saxony has declared that a refusal to permit a blood test must not be construed as a reflection on the accused. Paternity diagnosis with the aid of a blood test is most important in suits brought against alleged parents for the nonsupport of illegitimate children. In such cases, such proof must be furnished that, in view of the evidence, it is impossible that the man concerned can be the father of the child. Whether the blood test is such as to guarantee the conception of "evidently impossible" was declared by experts and jurists to be doubtful. Nevertheless, for several years, the blood test has been adduced in many instances as evidence.

In criminal law there has been less hesitation in using this procedure to establish facts, because here the principle of the liberal weighing of evidence holds good. Here the blood test may be decisive, particularly in charges of perjury against mothers who have falsely accused a man of being the father of her child and in case of criminal substitution and abduction of a child. From the criminologic point of view, the most importance attaches to the determination of blood groups from blood spots.

Unger gave an account of blood donor organizations and referred to the methods in use in other places, especially New York. In Berlin only a few hospitals have donors readily available. There is, however, a central in the Virchow-Krankenhaus, and the municipal health service constitutes a clearing house of information in regard to available blood donors. Unger demonstrated his simple technic of blood transfusion but warned that blood transfusions must not be employed unless the indications are fully established.

Infantile Paralysis in Germany

The Deutsche Vereinigung für Krüppelfürsorge has published the following proclamation:

Infantile paralysis has been more prevalent in Germany, this year, than ever before. Along with the necessary measures for the prevention of a spread of this infectious disease, and also for its early detection and treatment, the orthopedic care after the appearance of paralysis must not be neglected. Up to October 22, 3,064 cases of the disease had been reported in Germany. These cases concern almost exclusively children and juveniles, with more or less extensive and very often also permanent lameness. Timely orthopedic treatment exerts a decisive influence on the later fate of crippled patients, the bodily injuries being thereby eliminated or rendered less serious, and, above all, secondary crippling effects, often of a severe nature, are prevented. Aside from the orthopedic treatment, care must be taken that the crippled child receives a thorough educational training that will fully develop his mental powers and his social capacities. The directorate of the Deutsche Vereinigung für Krüppelfürsorge demands that the general practitioners, the pediatricians and the neurologists summon an orthopedic specialist in every case of infantile paralysis. It requests all physicians to report all lamed or crippled patients to the proper "Jugendamt" as cripples. (Notification is obligatory in Prussia, Brunswick, Bremen and Schaumburg-Lippe, and should be made compulsory in the other *länder*). It asks that the public welfare authorities immediately adopt measures to secure a complete list of this year's victims of infantile paralysis in the cities and the rural districts and see to it that all these victims are examined by the *landeskrüppelarzt* (state orthopedist). Furthermore, it expects the welfare leagues of the local districts and of the various *länder* to give those who are crippled by reason of infantile paralysis and are in need of assistance the advantage of whatever welfare measures are found to be necessary. Those who need institutional care find the most satisfactory aid in the homes for cripples, since these have had extensive experience in dealing with such cases and have at their disposal the most suitable clinical and pedagogic equipment.

Statistics on Sport Activities

The federal commission on physical training has ascertained that there are in Germany about 6,000,000 active devotees of athletic sports. Thirty years ago there were only 800,000. The curve mounted rapidly up to 1914, and since 1918 it has leaped upward, so that it is expected that by 1936, when the eleventh Olympian contest is to be held here, 8,000,000 active participants in sport activities will be found. As there are 12,000,000 Germans ranging in age from 15 to 25, it is assumed that every

third person, considering both sexes, is actively engaged in some form of athletic sport. It appears that the economic crisis has been unable to check this development.

Twins Born at Midday

At the instance of the federal bureau of statistics, Privatdozent von Verschuer of the Kaiser Wilhelm institute for anthropology and hereditary research has been investigating the question as to the time of day at which twin births most frequently occur. From an examination of his own cases and the books of the recorder's office in Berlin, Verschuer reached the conclusion that most twin births occur around midday; according to the investigations of the Leipzig gynecologist Professor Bellheim, most births in general occur during the night. As to the seasons in which twin births are more frequent, no conclusions could be reached.

BUDAPEST

(From Our Regular Correspondent)

Jan. 7, 1933.

Is a University Professor a Specialist?

Dr. B. L. Gaston Forneth has been appointed director of the medical clinic of the Debreczen University, whereupon he applied to the municipal government to be registered as a specialist. As his application was in the form of an ordinary letter, the council requested him to send in the customary credentials. The professor replied that he desired to withdraw his application. Nevertheless, the city management enrolled him in the register of specialists, arguing that if one has been appointed the director of a university clinic for internal diseases he is certainly fit to be registered as a specialist. The city medical officer, Dr. Alexander Lang, however, appealed against the registration, saying that the professor did not have the two years clinical practice that the law prescribes. The City Council passed the appeal on to the Budapest ministry of health, with the remark that it does not seem necessary that a university professor whom the ministry of instruction appointed be bothered with proving his clinical practice, as it is certain that he has practiced that much. The ministry of health decided that the rigid observance of the law is a citizen's duty and that no one can be exempted. The professor can easily prove having had clinical practice for two years and the demand to observe a form prescribed by the law is no offense.

Birth Control in Hungary

At a recent meeting of the Royal Medical Society, Dr. Heinrich Derera spoke on the necessity of a change of the birth control law now in force. He said that those officials who think of nothing but the "preservation of the nation" without regard for the present critical economic conditions render a hardship on numerous families. Questions must not be evaded when their proper solution would preserve the health of millions of Hungarian women as well as the happiness of family life.

Physicians, said Derera, often see much harm originating in the incorrect application of the birth control law. The majority of women who consult gynecologists suffer from mental and physical changes, the cure of which is often impossible, although they could have been prevented by prophylactic measures. With sick women a nation cannot be upheld. Abroad medical journals, sociologists and even the clergy deal with this question and try to solve it. In Germany Professor Stöckel deals with the methods of birth control in his university lectures. The Weltbeförderungsconferenz, the International Birth Control League, the Internationale Gesellschaft für Sexualforschung and the Weltliga für Sexual Research all attribute great significance to the proper use of contraception. In the interest of the public it is necessary that the leadership in the birth control movement remain in the hands of medical institutions, lest the advertising of contraceptives threaten the moral and physical health of the people. Dr. Dera urged the establishing in Hungary of welfare centers, where women may be taught properly the methods of contraception. He appealed to the government to withdraw the order prohibiting the importation of contraceptive drugs, so that ethical physicians may be able to prescribe them when they deem it necessary.

The Strike of Junior Physicians

Thirty-six physicians of the Budapest Jewish Hospital who received no pay for their services went on strike. The leaders of the medical profession in Hungary held that medical work cannot be done without adequate remuneration. The young physicians did their best to induce the board of the Jewish community to give at least 50 pengo ($20) a month to the assistant physicians but the board argued that, owing to the financial circumstances of the community, they are unable to grant their request. The strike lasted for several weeks. Finally the medical association and the board came to an agreement that from Nov. 1, 1932, the assistant physicians will get a salary. At the same time it was agreed that because of the strike none of the physicians should be punished. The board of the hospital created five paid assistant positions on condition that the salary is not to be paid by the hospital but from a fund raised from the fees, paid by the private patients of physicians-in-chief, treated in the paying wards of the hospital. The rest of the young physicians acquiesced, realizing that their service in the hospital is only temporary and pertains to their studies. However, since the strike the thirty-six physicians have been removed in groups of five and ten in an unusual way. The white uniforms of some of the junior physicians were taken away by servants, who told them that they are not entitled to come to the hospital any more. Another young physician, with ten years of service, while on duty was told by the assistant superintendent of the hospital that he had no right to wear the white uniform. The young physicians went to the medical association to report these incidents, as the board had agreed not to punish the doctors who went on strike. The medical association called a special general meeting to deal with the situation.

BELGRADE, YUGOSLAVIA

(From Our Regular Correspondent)

Jan. 6, 1933.

Free Choice of Physicians Under Sickness Insurance

The laws regarding health insurance societies were not promulgated at the same time throughout the whole country. The parts of Yugoslavia that formerly belonged to Austria-Hungary were under such laws in 1888 and 1892, while the kingdoms of Serbia and Montenegro—now forming part of Yukoslavia—adopted them first in 1922. Germany, the pioneer in social insurance, had a system whereby physicians worked for such institutions at a fixed rate of pay. Austria-Hungary adopted the same system about 1890, and the laws regarding this were put into force throughout the whole country by the law enacted in 1922. Now the Yugoslavic Medical Association demands that the new law, which will be discussed this year in parliament, shall provide for a free choice of physicians in the health insurance societies. The directors of these societies want absolutely to retain the same system of fixed rate of pay for physicians that is now in force. On account of these opposing views a conflict has started, and that is why the new law has not yet been brought before parliament. As the number of insured persons will soon be much greater, the Yugoslavic Medical Association wants a change in the law in order to insure better conditions for physicians working in the health insurance societies. Herewith are presented briefly the arguments on both sides:

In 1932 the average number of insured persons was about 609,190, and the number of physicians engaged 1,382; these

served on two different scales: for general practice 1,068, specialists 166, physician-dentists 112, and technician-dentists (without M.D. degree) 36. Of 1,382 medical men, 1,156 have made a contract with the directors, and only 226 were employed as full time officers having the same rights as state officers (pension after thirty-five years of service). Thus each physician had about 440 members to take care of, or, if the dentists are included, this figure is raised to 479, so that for a medical visit the physician received about 4 dinars, or 6⅔ cents.

The directors claim, in view of the financial situation, that it is impossible to pay more, and that the proposed system of free choice of physicians would require twice as much money to be paid to them. Even with the present system with a fixed rate of pay to physicians, difficulty is experienced in paying them. If the German system of free choice of physicians should be adopted, each one would have to treat 613 insured members, instead of 479, as is the case in Yugoslavia. In Germany each insured member pays yearly 1,441 dinars to the health insurance societies, while in Yugoslavia he pays only 488 dinars, and that is why our insurance budget is unable to allot more for medical treatment than is done at present.

In 1929, for 620,000 insured members, the health insurance societies of Yugoslavia paid out about 30,000,000 dinars to the physicians on a fixed rate of pay; i. e., about 47 dinars for each member. In Vienna, Austria, the physicians were paid 80 dinars for each member, and in Germany 243 dinars. The Yugoslavic Medical Association claims that 47 dinars is too modest a scale of remuneration for the work entailed.

The directors fear that the amounts granted for sickness and unemployment will become enormously increased with the system of free choice of physicians. The directors would be unable to control the physician's work effectively and in that way other expenses would rise, and the physician's earnings would be twice as high.

There are 4,000 physicians in Yugoslavia; 1,400, or about 35 per cent, are employed in the health insurance societies, in which only 7.1 per cent of the general population are insured. As the number of insured persons will increase soon under the new laws of social insurance, the Yugoslavic Medical Association is making every effort to make the position of physicians better than it now is. A greater number of physicians will soon be thus employed. The medical association claims that the expenditure for general administration at the health insurance societies is too high, that the budget allocated for new buildings and other investments is disproportionate, and, finally, that the physicians, being very modestly remunerated by the fixed rate of pay, must be freely chosen by the patients. To come to an understanding between two such divergent views is proving almost impossible, and it is not yet known whether the new law will permit the free choice of physicians.

Ten Year Campaign Against Tuberculosis in Yugoslavia

An extensive study was published recently by Dr. Vasa Savich on the work accomplished from 1920 to 1930 in combating tuberculosis. The population of Yugoslavia increased from 12,149,000 in 1920 to 13,879,000 in 1930. The methods and scope of the campaign against tuberculosis have developed greatly during this period and have obtained a most satisfactory measure of success, in view of all the conditions existing in the country. This campaign was led by the Red Cross, antituberculosis leagues, health insurance societies, the central bureau of social welfare, the army and navy departments, state railroads, mutual insurance societies, and finally the ministry of public health. The work of the ministry was the most important, serving as the pivot for all antituberculosis work. Special laws were promulgated for the training of physicians as specialists in tuberculosis, also of school physicians, and other personnel; for the methods to be followed in the physical education of the nation; for the protection of children, and a special law for tuberculous school children and teachers, to remove them from the schools. The School of Hygiene in Zagreb and ten hygienic institutes organized annually special courses on tuberculosis for physicians and for public lecturers. One of the most important problems was the creation of special hospitals and sanatoriums for the tuberculous.

Whereas in 1918 there were only 87 beds in the whole country for the treatment and isolation of tuberculous patients, this number was increased by 1930 to 5,135, comprising 3,356 beds in sanatoriums and 1,779 in hospitals.

From 1918 to 1930, at all the prophylactic institutions, 1,238,942 initial medical examinations were made and 1,625,175 subsequent examinations, i. e., a total of 2,864,117 medical examinations for tuberculosis; 413,687 cases of tuberculosis were diagnosed, and 177,555 home visits were made. In all, 104,281 tuberculous persons were admitted to sanatoriums or hospitals, and 15,502 were isolated and treated in their homes.

The mortality from tuberculosis has certainly decreased. While the general mortality rate for 1930 as compared with 1918 has decreased, the rate from tuberculosis has decreased in the same period from 49.87 per cent to 32.35 per cent. But if 1920 is taken as a normal year, after the World War and the epidemic of influenza of 1918, the comparison will be more exact. From 1920 to 1930 the general mortality rate decreased 20.87 per cent, and the tuberculosis mortality decreased 15.16 per cent.

By this method of computing, in the last twelve years 125,811 lives have been saved by the antituberculosis campaign. But if it had been possible to enforce all the general and special methods as they are in the United States, 272,000 more lives would have been saved. From that standpoint the sanitary deficit in Yugoslavia is enormous. For this reason it is imperative that we in this country reorganize our campaign and all other means of fighting the disease. The campaign now must be accommodated to our special conditions. Three main principles, however, must always be respected: 1. Koch's bacillus must be destroyed and its dissemination prevented outside the infective home. 2. Poor social conditions must be improved. 3. The biologic forces of the people must be developed and supported and their powers of resistance must be raised to the maximum.

The mortality rate from tuberculosis in Yugoslavia in comparison with some other countries is as follows: The mortality rate from tuberculosis per 10,000 was in 1928 in Denmark, 7.4; in the United States, 7.92; in England and Wales, 9.28; in Sweden, 12.6; in Norway, 15.6, and in Yugoslavia (in 1930), 22.94. Our mortality rate from tuberculosis was two and a half times as great as that of England, and nearly three times as great as that of the United States. These figures would indicate that we need about 40,000 beds for tuberculosis cases, instead of the 5,135 which we have at present. This is an urgent need, and every effort is being made to augment the present number of beds as much as possible.

Marriages

WILLIAM PRENTICE KNOX, Decatur, Tenn., to Miss Alma Dyche of Corbin, Ky., at Madisonville, Ky., Dec. 22, 1932.

FRANK NAEGELI, Fergus Falls, Minn., to Mrs. Martha Nordby of Argusville, N. D., January 1.

RALPH H. SEGREST to Miss Sarah Lee Green, both of Bonifay, Fla., in Milton, Dec. 28, 1932.

BERNARD VINCENT MCCABE to Miss Lucy Flinn, both of Helena, Mont., recently.

HARRY J. FORTIN to Mrs. Adele Hayden, both of Fargo, N. D., recently.

Deaths

Malcolm Ozro Grace, Ozark, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1909; member of the Medical Association of the State of Alabama; at one time secretary of the Dale County Medical Society; formerly member of the state board of health, and health officer of Ozark and of Dale County; aged 48; medical director and owner of the Grace Hospital, where he died, January 2, following an operation for appendicitis.

Ansel Granville Cook ⊕ Hartford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1887; served during the World War; fellow of the American College of Surgeons; consulting surgeon to the Hartford and Hartford Municipal hospitals, Hartford, Litchfield County Hospital, Winstead, and the Middlesex Hospital, Middletown; aged 70; died, January 25, of heart disease.

John William Cahill ⊕ Worcester, Mass.; Harvard University Medical School, Boston, 1907; member of the American Academy of Ophthalmology and Oto-Laryngology, the New England Ophthalmological Society and the New England Otological and Laryngological Society; aged 50; on the staff of St. Vincent Hospital, where he died, January 15, of lobar pneumonia and arteriosclerosis.

Merle William King ⊕ Cleveland; Johns Hopkins University School of Medicine, Baltimore, 1917; fellow of the American College of Surgeons; on the staffs of St. Luke's Hospital and the Charity Hospital; aged 47; was instantly killed, January 9, when the automobile in which he was driving plunged over an embankment into the Chagrin River.

Louis Edward Broughton ⊕ Andalusia, Ala.; Medical Department of the Tulane University of Louisiana, New Orleans, 1893; past president of the Medical Association of the State of Alabama; fellow of the American College of Surgeons; on the staff of the Andalusia City Hospital; aged 63; died, January 27, of acute nephritis.

Percy De Mille McLeod ⊕ Tonopah, Nev.; Harvard University Medical School, Boston, 1894; secretary and past president of the McLeod County Medical Society; county health officer; aged 63; died, January 8, of burns received when the automobile in which he was driving overturned and caught fire.

Louis E. Goldblatt, Brooklyn; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1930; resident physician to the Evangelical Deaconess Hospital; aged 32; died, January 5, following laceration of the esophagus accidentally incurred by some foreign body in the food.

Theodore N. Kittelson ⊕ Fergus Falls, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1902; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 57; on the staff of St. Luke's Hospital, where he died, January 10, of pneumonia.

Theron James Vosburgh, White Plains, N. Y.; University and Bellevue Hospital Medical College, New York, 1908; member of the Medical Society of the State of New York and the American Psychiatric Association; aged 49; died, Dec. 4, 1932, of arteriosclerosis and nephritis.

Frank Lipscomb Watson ⊕ McAlester, Okla.; University Medical College of Kansas City, Mo., 1899; secretary and past president of the Pittsburgh County Medical Society; aged 60; on the staff of the Albert Pike Hospital, where he died, Dec. 21, 1932, of pneumonia.

James Horace Lenow, Little Rock, Ark.; Jefferson Medical College of Philadelphia, 1872; member and past president of the Arkansas Medical Society; emeritus professor of urology and formerly dean, University of Arkansas School of Medicine; aged 82; died, Dec. 30, 1932.

Maurice Martin Critchlow, Salt Lake City, Utah; Rush Medical College, Chicago, 1917; fellow of the American College of Surgeons; member and formerly secretary of the Utah State Medical Association; aged 41; died, January 18, of a narcotic, self administered.

Gassaway Oram Ring ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1885; member of the American Ophthalmological Society; formerly on the staff of the Episcopal Hospital; aged 71; died, January 17, of cerebral hemorrhage.

Thomas Andreas De Marco, Springfield, Mass.; Royal University of Naples Faculty of Medicine and Surgery, Naples, Italy, 1900; member of the Massachusetts Medical Society; aged 58; died, January 3, in the Wesson Memorial Hospital, of cerebral hemorrhage.

James Urey Ridley, Henderson, Ky.; Hospital College of Medicine, Louisville, 1907; member of the Kentucky State Medical Association; served during the World War; on the staff of the Henderson Hospital; aged 50; died, January 17, of cerebral hemorrhage.

Lazare Weiss, Newark, N. J.; Universitatea din Bucuresti Facultatea de Medicina, Roumania, 1899; member of the Medical Society of New Jersey; aged 70; died, January 7, at the Aurora Health Farm, Morristown, of myocarditis and coronary thrombosis.

James Le Roy Cooper, Fort Worth, Texas; College of Physicians and Surgeons, Baltimore, 1883; member of the State Medical Association of Texas; aged 72; died, January 13, in the Harris Hospital, of peritonitis following a cholecystectomy.

Gustavus Albert Warren ⊕ Black Rock, Ark.; Missouri Medical College, St. Louis, 1894; past president of the Arkansas Medical Society and the Lawrence County Medical Society; aged 66; died, Dec. 26, 1932, of heart disease, following septicemia.

Albert Walter Durand, Newark, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1886; member of the Medical Society of the State of New York; aged 68; died, January 15, of chronic myocarditis.

Raymond Clare Coleman, Estherville, Iowa; State University of Iowa College of Medicine, Iowa City, 1912; medical director and owner of a hospital bearing his name; aged 43; was found dead, January 7, of a self inflicted bullet wound.

George McCrea Robson, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1924; instructor in pathology at his alma mater; on the staff of the Misericordia Hospital; aged 33; died, January 16, of heart disease.

John Hughes Scott, Shawnee, Okla.; Kentucky School of Medicine, Louisville, 1894; member and past president of the Oklahoma State Medical Association and the Pottawatomie County Medical Society; aged 68; died, Oct. 11, 1932.

John Lawrence Sheetz ⊕ New Oxford, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1879; aged 76; died, January 7, in the Annie M. Warner Hospital, Gettysburg, of hypertrophy of the prostate and uremia.

William Francis Donahue, Watertown, Mass.; Harvard University Medical School, Boston, 1896; member of the Massachusetts Medical Society; aged 64; died, Dec. 28, 1932, of Parkinson's disease and bronchopneumonia.

Louis Henry Clarke ⊕ Holyoke, Mass.; College of Physicians and Surgeons, Medical Department of Columbia College, 1885; part owner of the Holyoke Surgical Hospital; aged 69; died, January 15, of coronary endocarditis.

George Mitchell Belhumeur, Iron Mountain, Mich.; University of Michigan Medical School, Ann Arbor, 1908; member of the Michigan State Medical Society; aged 49; was found dead, January 9, of heart disease.

Ross Underwood Whiteside ⊕ Surg., Lieutenant Commander, U. S. Navy, Brooklyn; Emory University School of Medicine, Atlanta, 1918; entered the Navy in 1921; aged 41; died, Dec. 16, 1932, at Ohatchee, Ala.

John Mitchell Washburn, Kewanna, Ind.; Medical College of Indiana, Indianapolis, 1895; member of the Indiana State Medical Association; aged 65; died, Dec. 25, 1932, of chronic nephritis and myocarditis.

Joseph J. Woodard, Olathe, Kan.; University Medical College of Kansas City, Mo., 1899; member of the Kansas Medical Society; formerly county coroner; aged 74; died, Dec. 28, 1932, of cerebral hemorrhage.

Frederick Tremaine Billings ⊕ Pittsburgh; Yale University School of Medicine, New Haven, 1898; fellow of the American College of Physicians; aged 59; died, January 5, of subacute bacterial endocarditis.

M. Arista Bingley, Chicago; College of Physicians and Surgeons, Chicago, 1898; member of the Illinois State Medical Society; aged 79; was killed, Dec. 24, 1932, when he was struck by an automobile.

Halsey Lathrop Wood, New York; College of Physicians and Surgeons in the City of New York, Medical Department of Columbia College, 1875; aged 83; died, January 12, of chronic endocarditis.

Bruce Gould Blackmar ⊕ Brooklyn; College of Physicians and Surgeons in the City of New York, Medical Department of Columbia University, 1892; aged 64; died, January 13, of heart disease.

John G. Wakefield, Wilkinsburg, Pa.; University of Pittsburgh School of Medicine, 1910; member of the Medical Society of the State of Pennsylvania; aged 52; died, Dec. 27, 1932, of pneumonia.

Addison Clyde Grimes, Clayton, N. M.; Vanderbilt University School of Medicine, Nashville, Tenn., 1927; member of the New Mexico Medical Society; aged 32; died, Dec. 26, 1932, of pneumonia.

John Edwin Quidor ✠ Vicksburg, Miss.; University of Arkansas School of Medicine, Little Rock, 1905; aged 53; died in January, of cirrhosis of the liver and esophageal varices with hemorrhage.

Albert Peacock, Chicago; University of Buffalo School of Medicine, 1891; member of the Illinois State Medical Society; aged 70; died, January 11, of myocarditis, influenza and pneumonia.

Adelard Riverin, Chicoutimi, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1893; aged 64; died, Nov. 16, 1932.

Lorenzo D. A. Winn, Poynette, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; aged 77; died, Dec. 23, 1932, in a hospital at Madison, of hypostatic pneumonia and nephritis.

Ransom E. Moss, Pontiac, Mich.; University of Buffalo School of Medicine, 1880; member of the Michigan State Medical Society; aged 78; died in December, 1932, of heart disease.

Francis Frederick Knorp ✠ San Francisco; Cooper Medical College, San Francisco, 1892; on the staff of St. Mary's Hospital; aged 60; died, January 20, of heart disease.

Henry Ambrose D. Schollenberger, Smithville, Ohio; National Normal University College of Medicine, Lebanon, 1892; aged 70; died, January 15, of carcinoma of the liver.

Charles Edward Thomas, Anniston, Ala.; Long Island College Hospital, Brooklyn, 1890; aged about 62; died, January 4, of stab wounds in the chest, inflicted by someone unknown.

John Edward Matheson, Vancouver, B. C., Canada; University of Toronto Faculty of Medicine, 1927; on the staff of the Vancouver General Hospital; aged 30; died, Nov. 9, 1932.

Thomas Daniel Casey, Ashland, Pa.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 60; died, Nov. 24, 1932.

Green M. Coston, Ireland, Texas; University of Tennessee Medical Department, Nashville, 1889; member of the State Medical Association of Texas; aged 73; died, in January.

Watson G. Scurlock, Jackson, Ohio; Starling Medical College, Columbus, 1900; member of the Ohio State Medical Association; aged 57; died, January 5, of angina pectoris.

William A. Schwallie, Honolulu, Hawaii; Medical College of Ohio, Cincinnati, 1889; member of the Hawaii Territorial Medical Association; aged 66; died, Nov. 17, 1932.

Marshall Baker, Webster Groves, Mo.; St. Louis Medical College, 1879; member of the Missouri State Medical Association; aged 87; died, January 6, of chronic myocarditis.

Edward M. Culp, Clifton, Tenn.; Vanderbilt University School of Medicine, Nashville, 1913; aged 46; died, January 3, in St. Thomas' Hospital, Nashville, of pneumonia.

Grover Athey Beckett, Covington, Ky.; Kentucky School of Medicine, Louisville, 1907; served during the World War; aged 48; died, January 17, of acute nephritis.

William H. Englesby ✠ Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1897; aged 60; died, Dec. 22, 1932, of cerebral hemorrhage.

Millard F. Wedding, Rome, Ind.; University of Louisville (Ky.) School of Medicine, 1885; aged 76; was found dead in bed, Dec. 5, 1932, of heart disease.

Edwin H. Mendenhall, Richmond, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; aged 63; died, Nov. 29, 1932.

William Duff Murray, Vancouver, B. C., Canada; Dalhousie University Faculty of Medicine, Halifax, N. S., 1906; aged 52; died suddenly, Sept. 20, 1932.

Nathaniel Sheppard Bush, Cincinnati; Miami Medical College, Cincinnati, 1883; aged 77; died, January 21, in Newport, Ky., of lobar pneumonia.

Webster Bliss, Ann Arbor, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1878; aged 90; died, January 14, of arteriosclerosis.

Daniel Kriedt ✠ Minneapolis; Medical Department of Hamline University, Minneapolis, 1900; aged 55; died, Dec. 29, 1932, of coronary sclerosis.

John H. Walton, Como, Miss.; University of Louisville (Ky.) School of Medicine, 1882; aged 79; died, Nov. 30, 1932, of cerebral hemorrhage.

Smithpeter N. Smith, San Luis, Colo.; University of Louisville (Ky.) School of Medicine, 1894; aged 66; died, Dec. 19, 1932, of pneumonia.

Mercena Sherman Ricker, Rochester, N. Y.; Homeopathic Hospital College, Cleveland, 1888; aged 81; died, January 17, of lobar pneumonia.

Richard Rowan, Stouffville, Ont., Canada; Victoria University Medical Department, Coburg, 1890; also a druggist; aged 78; died, Oct. 22, 1932.

Mary E. Richards, Brooklyn; New York Medical College and Hospital for Women, 1895; aged 80; died, Nov. 26, 1932, of carcinoma of the rectum.

John Jacob Mory, St. Henry, Ohio; Jefferson Medical College of Philadelphia, 1869; aged 86; died, Dec. 28, 1932, of intestinal obstruction.

Marvin S. Rice, Aurora, Ill.; Hahnemann Medical College and Hospital, Chicago, 1876; aged 81; died, January 17, of coronary thrombosis.

Jasper LeRoy Atherton ✠ Springfield, Mo.; Bennett Medical College, Chicago, 1912; aged 53; died, Dec. 4, 1932, of coronary thrombosis.

Prince Tannatt Woods, Kingston, Mass.; Boston University School of Medicine, 1895; aged 62; died, Oct. 10, 1932, of coronary sclerosis.

Charles V. Emmanuel Marsil, St. Eustache, Que., Canada; Laval University Medical Faculty, Montreal, 1887; aged 67; died, Sept. 18, 1932.

Needham P. Boddie ✠ Durham, N. C.; College of Physicians and Surgeons, Baltimore, 1883; aged 73; died, January 26, of heart disease.

John W. Motley, Bethel Springs, Tenn. (licensed, Tennessee, 1891); aged 77; died, Dec. 14, 1932, of carcinoma of the cervical glands.

Benoni F. Underwood, Edgewater, N. J.; Homeopathic Medical College of Pennsylvania, Philadelphia, 1868; aged 89; died, Nov. 21, 1932.

Wilfred Northup Cochran, Mahone Bay, N. S., Canada; Halifax Medical College, 1901; served during the World War; died, Nov. 5, 1932.

James Gordon Baird, Riverside, Calif.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1870; aged 86; died, Dec. 2, 1932.

Herring Winship ✠ Macon, Ga.; Jefferson Medical College of Philadelphia, 1903; aged 57; died, Dec. 30, 1932, of agranulocytosis.

Thomas Andrew Long, Portland, Ore.; American Medical College, St. Louis, 1883; aged 76; died, Dec. 19, 1932, of arteriosclerosis.

John Franklin Ross, Kirkfield, Ont., Canada; Victoria University Medical Department, Coburg, 1892; aged 72; died, Nov. 25, 1932.

Bernhard Erp Brockhausen, Freeport, Ill.; Humboldt Medical College, St. Louis, 1869; aged 87; died, January 13, of pyuria.

Alfred Drouin, Bagotville, Que., Canada; Laval University Faculty of Medicine, Quebec, 1901; aged 60; died, Nov. 22, 1932.

Charles Elsworth Teter, Alameda, Calif.; Central Medical College of St. Joseph, Mo., 1899; aged 62; died, Nov. 22, 1932.

Henry Volle, Reading, Ohio; Eclectic Medical Institute, Cincinnati, 1891; aged 79; died, Dec. 9, 1932, of pneumonia.

Arnold Grant Webb, Cincinnati; Medical College of Ohio, Cincinnati, 1900; aged 57; died, Dec. 23, 1932, of heart disease.

Thomas D. Palmer, Chicago; Chicago Medical College, 1867; aged 84; died, January 17, of carcinoma of the prostate.

Charles E. Kerney ✠ Dayton, Ohio; University of Michigan Medical School, Ann Arbor, 1891; aged 66; died, January 3.

John A. Plumer ✠ Trivoli, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1889; aged 64; died, Nov. 27, 1932.

John Francis Shea, Boston; New York University Medical College, New York, 1898; aged 57; died, Nov. 25, 1932.

Harry C. Hubbard, Parma, Mich.; Fort Wayne (Ind.) College of Medicine, 1892; aged 66; died, Dec. 18, 1932.

Bureau of Investigation

DeWAN'S DEPILATORY

Another Sulphide Hair Remover Sold Under False and Misleading Claims

For some time past there has been an aggressive advertising campaign for a product called "DeWan's Permanent Hair Remover." A number of inquiries have been received by the Bureau of Investigation from physicians, laymen, department stores, Better Business Bureaus, etc., asking for information on the product. A Chicago physician wrote:

"One of my patients has asked me about DeWan's Permanent Hair Remover. Has it been investigated by your department? If so, I would appreciate a copy of your report."

A layman in California wrote:

"Please send me available information on DeWan's Permanent Hair Remover."

A physician, medical director of a department store in Cleveland, Ohio, writes:

"Please let me have any information you may have concerning DeWan's Depilatory. I have been asked to advise a department in our organization with regard to the value of this preparation and what type of advertising they should use in connection with it."

A large department store in San Francisco wrote:

"We have been offered a product known as DeWan's Permanent Hair Remover, made by the DeWan Laboratories, Inc., Chicago. This product carries many testimonials and guarantees that on the face of them look convincing, but we are not in a position to accept these or any similar statements unless backed up by authority such as is embodied in your institution."

DeWan's Laboratories, Inc., was incorporated under Illinois laws in the spring of 1932, but apparently did not become active until September, 1932. It had for its officers Francis DeWan, president and treasurer, Mrs. Francis (Evelyn L.) DeWan, secretary, and William H. Leckie, vice-president, all of Chicago. Francis DeWan has been described as a chemist, although his name seems to be unknown to the chemical profession, and does not appear in the directory of the Chicago section of the American Chemical Society. In the latter part of December, 1932, the assets and good will of the DeWan Laboratories are said to have been purchased by J. L. Younghusband, president of American Advertised Products, Inc.

When the DeWan preparation first came out, the company exploiting it was called the Saint Aubin Corporation at 43 East Ohio Street, Chicago. Later this became the DeWan Laboratories, Inc., at the same address. Still later this became the DeWan Laboratories at 11 East Austin Avenue, Chicago, while the latest name is DeWan-Hollywood Laboratories, Inc., Hollywood, Calif.

Before the DeWan product changed hands and was taken over by the present owners, the following claim, among others, was made:

"Each of the fifteen separate ingredients contained in Permanent was thoroughly tested individually and in compound with the others and a product perfected which can be used without harmful or injurious results on the face, limbs and body, as is attested by endorsement of Rush Medical College of Chicago."

When this claim was brought to the attention of Rush Medical College, Dr. Ernest E. Irons, the dean, wrote under date of Dec. 30, 1932, to the DeWan Laboratories, Inc., asking who made the report and on what statements the Rush Medical College alleged endorsement was made. At the time Dr. Irons developed the fact that there was not the slightest basis for any such claim, that no one connected with Rush Medical College had authorized any endorsement of the DeWan product nor had any report been made to the DeWan Laboratories, Inc., concerning their product. After two weeks' delay, Dr. Irons received a letter from the attorneys for the new owners of the DeWan product, stating that when negotiations were being carried on with respect to the purchase of the DeWan concern, the statement was made that the preparation had been endorsed by Rush Medical College, but when proof of such statement was requested, none was forthcoming. The attorneys apologized for the misstatement, although explaining that neither they nor their clients were responsible for it and that the statement had not been made by the new owners.

The DeWan depilatory has been heavily advertised under the names of various department stores. These large and expensive advertisements are said to have been paid for, not by the department stores whose names give an air of respectability to the business, but by the DeWan concern itself. As cosmetics do not come within the scope of the National Food and Drugs Act, the manufacturers of such products can—and frequently do—make false and misleading statements on and in the trade package in a way that would lay a "patent medicine" concern open to prosecution.

The story told in the circular sent with the trade packages of the earlier specimens was to the effect that a "French chemist" had, through his skill and perseverance, been able to devise a depilatory that had no offensive odor and would harmlessly and permanently remove hair. There was the usual hokum regarding the "insurmountable difficulties" that confronted the chemist in his quest, and the necessary mystery element was injected by the claim that "the far corners of the world were called upon for some of the more than fifteen harmless ingredients" that, allegedly, went into the depilatory.

Greatly reduced facsimiles of some large display advertisements used in the present DeWan campaign.

In some of the later advertising the following claims appear:

"No harsh or poisonous chemicals are used, so there is no obnoxious odor—it will not irritate the most sensitive skin."

"Depends for its permanent action upon a scientific blend of rare oils."

"DeWan's is positively non-irritating and should any redness or irritation be noticed after a treatment, it is due to an acid or similar condition of the body or an unhealthy condition of the skin."

The fact is, the DeWan preparation is just one more of the innumerable alkaline sulphides with which the depilatory field is flooded. Alkaline sulphides have the power of dissolving hornlike substances such as hair, and obviously anything that is powerful enough to remove the hair may easily be powerful enough to remove the skin. There is not a scintilla of scientific evidence to show that the continued application of alkaline sulphides will *permanently* remove hair. The claim that the DeWan product is a "permanent" hair remover is false, and the unqualified claim that the DeWan preparation is "harmless" is equally without justification.

Much stress is laid on the claim that the DeWan Preparation is "fragrant." It is a fact that it has been loaded down with perfume in an effort to disguise the smell of hydrogen sulphide that is inseparable from all alkaline sulphide depilatories. The DeWan preparation comes in powder form which, in use, has to be mixed with water and made into a paste. Before the water is added, the heavy perfume fairly successfully smothers the hydrogen sulphide smell; as soon as water is mixed with it, however, the rotten egg odor becomes quite obvious.

The A. M. A. Chemical Laboratory was asked to examine the DeWan preparation. They reported as follows:

LABORATORY REPORT

"An original specimen of DeWan's Permanent Hair Remover (DeWan Laboratories, Inc., 43 East Ohio Street, Chicago), purchased on the open market (Price $2.00) was submitted by the Bureau of Investigation to the A. M. A. Chemical Laboratory for examination. The jar contained 43.1 Gm. (approximately 1.4 ounces) of a white powder, possessing a strong aromatic odor (perfume) and also an odor resembling hydrogen sulphide. Qualitative tests indicated the presence of sulphides, sulphate, chlorides (trace), starch, zinc, strontium, calcium and sodium (trace). Barium, magnesium, potassium and thallium were not found.

"The report of a petrographic examination indicated the presence of zinc oxide, strontium sulphide, and a relatively large amount of orris root (starch)."

More recent specimens appear to have had the inactive ingredients changed, but strontium sulphide still remains the active depilating agent. The newspaper advertisements and the advertising that accompanies the trade package speak of "rare oils and secret ingredients which do not kill the root but sterilize it so it cannot reproduce." It is a sorry commentary on the public's intelligence that this sort of buncombe can appear in the public prints and that supposedly reputable newspapers and department stores will, for the money there is in it, give publicity to such nonsense.

The advertising circular, while stating that the DeWan preparation is "positively non-irritating," in the same sentence states that *if* it causes irritation, this result is due, not to the depilatory, but to an "acid condition" of the body! Especially vicious was the suggestion made in some of the circulars accompanying the trade package that this sulphide mixture be used to remove hair from the eyelids. Less than two months ago a physician reported an accident with another sulphide depilatory, which comes in paste form, that a woman patient accidentally got into one of her eyes. The sight was destroyed. It has also been recommended that the DeWan preparation be used to remove hair from the inside of the nostrils and inside the ears.

It would appear from the expensive advertising campaign and the exorbitant price ($2.00 for less than 1½ ounces) that is charged for the DeWan product that the exploiters will make a quick clean-up. The recommendations are that the patient (or victim) apply the DeWan product every fourth day for a period of thirty weeks. The exploiters "absolutely guarantee" that if it is used thus, the hair will be permanently removed. But should it fail, the DeWan concern does not offer to return the purchase money, but merely to supply without charge additional material! Of what value is such a guarantee? If the purchasers could get a "money back" guarantee from the respectable department stores that sell this "permanent" hair remover or from the equally respectable newspapers that share the profits in the exploitation of DeWan's, it might mean something. But a guarantee that merely promises that when a product proves worthless more of the product will be furnished free, means little.

Pasteur's Mistakes.—Pasteur was not a physician and could not be expected to have a correct knowledge of pathology and of the symptoms of diseases. But his medical colleagues should have protected him against the errors into which he had fallen. To try the saliva of rabid animals for immunization and the nasal secretion of horses for vaccination of rabbits against a horse-typhoid condition was nonsense. Saliva and nasal mucus contained many different organisms and what Pasteur claimed as a new disease in rabbits from a "figure of eight" microbe found in saliva was nothing more than rabbit septicemia, a disease long known and the organism well recognized. Pasteur had not procured his "vaccines" from the tissues specifically attacked in these diseases. Such rubbish should not have been brought to an international congress. Pasteur had not published fully his exact methods in attenuating the organisms of chicken cholera or of weakening the anthrax organism for the preparation of "vaccines." This was not scientific, as others could not check his results.—Webb, G. B.: Robert Koch, *Ann. M. Hist.* **4**:514 (Nov.) 1932.

Correspondence

ACUTE IODISM AFTER INSTILLATION OF IODIZED OIL

To the Editor:—In view of the report by J. O. Firth relative to acute iodism following a faulty iodized oil instillation (tracheal) in THE JOURNAL, January 14, it is interesting to note a case of an exactly similar nature that occurred in a young woman in the medical service of Dr. Abraham I. Rubenstone.

At 10 a. m., January 13, Miss K., aged 22, in a good state of health, was prepared for a diagnostic study of the bronchi with iodized oil. The pharynx and hypopharynx were cocainized by topical application of 20 per cent cocaine hydrochloride solution. Twenty cubic centimeters of fresh, warm iodized poppy-seed oil 40 per cent was slowly injected at the base of the tongue and the patient requested to breath deeply. The procedure seemed to be progressing in the accustomed manner, with the exception that the patient was distinctly observed to swallow three times during the course of the instillation. The roentgenogram showed a very poor endobronchial, iodized oil picture and demonstrated a quantity of iodized oil in the stomach.

At 4 p. m., six hours following the injection of iodized oil, the patient complained that she had apparently "caught a cold," as there was an excess of nasal secretion and marked lacrimation.

At 9 o'clock, the eyelids were edematous, she was suffering with periodic attacks of sneezing, and her voice had become hoarse.

At 1 a. m. the patient began to complain of sharp, bilateral pain over the parotid glands. In the morning she had all the signs of an acute infection of the upper respiratory tract with salivary gland involvement, except that she was entirely afebrile. It was at this time that a diagnosis of iodism was entertained. Later, Firth's case report was noted, and the striking similarity between these two cases was readily apparent.

The patient continued afebrile with a gradual subsidence, over a period of five days, of the symptomatology. The treatment consisted of the free exhibition of fluids and a saline purge.

S. LEON ISRAEL, M.D., Philadelphia.
Chief Resident Physician,
Mount Sinai Hospital.

TUBERCLE BACILLI IN THE STOMACH CONTENT

To the Editor:—The importance of the demonstration of tubercle bacilli in the stomach contents of children was pointed out by some students of the Sea View Hospital and the City of New York Department of Health in THE JOURNAL, May 28, 1932, page 1879. To search for tubercle bacilli in the sediment of the stomach is an easy and accurate way of detecting, in the absence of any expectoration, the presence of active tuberculous processes in children and even in adults. In fact, it has been used as a routine examination since 1930 in our service at Bordeaux, France, and nearly 300 patients have had the benefit of the procedure. In only a few cases the inoculation of guinea-pigs has been considered necessary, trustworthy results being obtained through our technic by direct microscopic examination. Therefore the method is being used on a more and more extensive scale and is considered a valuable improvement in the control of tuberculosis.

Though our technic was first derived from Armand-Delille, practice has led us to such changes that it must be described again. The lavage is carried out in the morning on an empty stomach after the first matutinal cough. During the night, indeed, bronchial mucosities have been swallowed unconsciously

and have not yet passed into the intestine; moreover, the first fits of coughing have cleaned the bronchi, in which material rich in bacilli is stagnating. An Einhorn catheter is used, its small diameter enabling the patient to swallow it without difficulty. Even the most nervous and timid patients, the greatest number of whom have been children from 4 to 13 years of age, do it easily. We ask the child sitting before us to open his mouth wide, and we promptly introduce into his pharynx with our finger the extremity of the catheter, asking him to swallow it like candy and to abstain from coughing. This is the only difficulty, and it is always overcome. Deglutition then progresses easily and the reaching of the stomach is indicated by a little line drawn on the catheter (a line for children, another for adults). Then we introduce from 50 to 60 cc. of physiologic solution of sodium chloride with the help of a 20 cc. syringe fitted to the other end of the Einhorn tube. We seldom are obliged to use more solution and we never perform a complete stomach lavage. This point of the method is particularly to be insisted on; it explains the innocuousness and the perfect simplicity of the method, which enables us to repeat it as many times as necessary on the same patient. The physiologic solution of sodium chloride is immediately extracted by aspiration with the syringe. Sometimes during this operation the tube has been accidentally moved and the olive no longer reaches the bottom of the stomach. The aspiration then is negative. It is sufficient to obtain from the patient two or three deglutitive movements in order to see the liquid rise in the syringe. In this liquid, bronchial secretions are found with their usual shape or only as shapeless purulent particles. As far as possible we try to obtain characteristic bronchial secretion. Sometimes we have the good fortune to find a true purulent sputum.

The specimens are centrifugated first at low speed. The sediment is suspended in 30 cc. of sterile water and treated by ten drops of sodium hydroxide. This is incubated for ten minutes at 30 C. with the addition of 25 per cent alcohol to make the density equal 1.004. The specimen, when homogenized, is centrifugated again for three quarters of an hour and the sediment is dropped on a slide without spreading. Smears are made by the usual Ziehl-Neelsen method for the detection of acid-fast bacilli. Examination of the slides must be performed many times and most completely. Bacilli are often rare and found only after a patient search of two or three slides made with the sediment of each centrifugated tube.

Inoculation of guinea-pigs is performed only in the event of negative direct examination with positive results of the Pirquet test and of the physical and roentgenologic examination. Then further investigation is required in an attempt to determine accurately the presence of an actual tuberculous process.

The method, applied in the beginning only to children, has now been extended to adults. In both cases it is used for the purpose of early diagnosis and is considered one of the most necessary and most useful procedures available for giving positive information in the incipient period of tuberculosis.

Children, unless suffering from an extensive ulcerative process, cannot spit before 7 or 8 years of age. The probability of a tuberculous infection, detected by the Pirquet test, the clinical and roentgenologic symptoms and the social conditions, must be ascertained by a positive result. Positive feces examination can be obtained by a rather cumbersome technic and not directly connected with the pulmonary lesions. We have obtained the best results with the routine examination of the stomach contents. The children were brought to us at the Centre Antituberculeux of Bordeaux or were hospitalized at the Sanatorium X. Arnozan. They were of school age and belonged to both sexes. For the most part, the suspicion was grounded on (1) a tuberculous home environment, (2) a positive Pirquet test and (3) a roentgenologic examination showing a hilus process with or without peribronchial enlargement. In every positive case, hospitalization or emergency treatment was ordered and the presence of an active tuberculous process was shown by further development. In negative cases, general supervision was considered sufficient and the suspicion was proved unjustified.

The routine practice of the exploration of the stomach contents in children has led us naturally to use it on adult patients from whom no sputum could be obtained, the diagnosis lacking the same definitiveness as for children. We discovered then that the method was of great diagnostic and prognostic usefulness.

The early diagnosis of tuberculous conditions being far more advanced now than some years ago, it frequently occurs that patients are sent to the sanatorium on suspicion aroused by a chronic state of depression or a roentgenologic examination. The difficulty then is to know whether tuberculosis is responsible for these conditions, and therefore what lines of treatment should be adopted. Expectoration not being obtainable in such cases, it has been systematically replaced by the exploration of the stomach content through the same technic as previously described. Patients with positive results are submitted to thorough supervision and kept under sanatorium care. Those with negative results are allowed to resume their formed life after some months' stay, which is sufficient to improve their condition materially. Many cases, of course, remain questionable, a positive impression being afforded by one or more methods of exploration, and a negative impression by others. But we consider it impossible to avoid questionable cases and we have never thought that we have found a final solution of the problem. We are content to possess a practical, convenient, simple method, which adds to our best means of reaching probability.

DR. FERDINAND PIÉCHAUD,
DR. RENÉ BACQUET,
Bordeaux, France.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PROOF OF ALCOHOLIC INTOXICATION

To the Editor:—In these days of many automobile accidents, the doctor is often called on to pass on individuals to determine whether they are under the influence of intoxicating liquor sufficiently to contribute to the cause for accident, or whether they are sufficiently intoxicated so that they should not be driving. What are the minimum signs and symptoms, and what is the minimum of adequate tests to determine these in order to render a decision unfavorable to the one who has been brought in as under suspicion of being too much under the influence of liquor to continue driving in order to prevent further accidental consequences? Please omit name.

M.D., California.

ANSWER.—American courts differ in the amount of evidence required to prove alcoholic intoxication, some being satisfied with the fact that the accused has been drinking, while others require clear and convincing evidence of loss of mental and muscular control and coordination. English jurists have pointed out that a man may be under the influence of alcohol to an extent that makes him totally unfit to drive an automobile and yet fail to present the complete syndrome of drunkenness or enough evidence to convict him were he walking or sitting still. Miles showed that, with delicate testing methods, mental and muscular incoordination could be detected in subjects showing less than 0.3 mg. of alcohol per cubic centimeter of blood, such as resulted from the ingestion of only 27 Gm. of alcohol, in concentrations as low as 2.75 per cent. Examining physicians, however, generally follow the more conservative interpretations of the law and hesitate to diagnose a man as suffering from acute alcoholic intoxication in the absence of signs of loss of control of speech or of locomotion, in addition to the mental alterations and odor and other symptoms of alcoholic imbibition. Chemical determinations showing a concentration of 1 mg. of alcohol or more per cubic centimeter of blood or urine, or for each 2 liters of expired air, greatly strengthen such diagnoses.

The examination of a suspect for alcoholic intoxication should include a medical interview, physical examination, neu-

rologic tests and chemical analysis for the presence and amount of alcohol. The subject should be asked to give his name, age and occupation and to state whether he has been drinking and whether he is ill, and may be requested to repeat test phrases, such as "Methodist Episcopal." Attention should be given to his apparent orientation, to his comprehension, to the loudness and rapidity of speech and to his choice of words, as well as to the clearness and correctness of enunciation. General behavior, disposition and reactivity should be observed, and hiccuping, belching, vomiting or drooling noted. The odor of alcohol or of other liquors on the breath or person, or the presence of liquor in the clothing, is recorded. Flushing of the face, congestion of the conjunctiva, rapidity of the pulse, and inequality, dilatation or abnormal reactions of the pupils are observed. Muscular incoordination is elicited by the Romberg test (swaying when standing with eyes closed) walking along a straight line or touching the finger to the nose or other points with the eyes closed, or similar tests. Chemical examinations should be made of the breath, urine, blood or spinal fluid for the presence and amount of alcohol.

Further discussion with reference to the literature may be found in the sixth chapter of Alcohol and Man, edited by Haven Emerson, recently published, and in Queries and Minor Notes, THE JOURNAL, Jan. 11, 1930, page 125, and Sept. 12, 1931, page 798.

ANOMALIES OF CONJOINED TENDON

To the Editor:—Recently I operated on a patient who had a congenital or developmental absence of the conjoined tendon and of the lower portion of the aponeurosis of the external oblique with a complete absence of the shelving edge of Poupart's ligament. Owing to the fact that this was an industrial case and on account of this missing structure it was difficult to repair the hernia, and since there was nothing to attach the arching fibers of the conjoined tendon, oblique and transversalis, a recurrence of the hernia is quite possible. Is this anomaly frequent?

J. W. SCHAUER, M.D., Cleveland.

ANSWER.—Anatomists and surgeons recognize the constant variableness of development of the conjoined tendon as well as the muscles forming it. B. B. Gallaudet (A Description of the Planes of Fascia of the Human Body, Columbia University Press, 1931) believes that the ligament of Poupart, which includes the portion known as the ligament of Gimbernat, is a distinct entity and is not continuous with the planes of fascia uniting with it above, below, in front and behind.

The absence of the ligament of Poupart has not been reported in any available references, but it is probable that extreme undevelopment may occur.

The external oblique fascia and the iliac fascia laterally are continuous at the ligament of Poupart with the iliopectineal fascia and the fascia lata; consequently, the use of these fascias should aid the closure of the inguinal canal. The use of the transversalis fascia also is of value.

The internal oblique and transversalis muscles or their conjoined tendon may be sutured to Cooper's ligament along the iliopectineal line, as is done in femoral hernia, in the absence of a strong ligament of Poupart. The rectus fascia may be turned down to reinforce this region.

By the proper plastic use of the fascias in this region and by transplanting the cord outside the external oblique fascia after the Gerard method of repair of inguinal hernia, a recurrence should be avoided.

RADIUM PAINT ON CLOCK DIALS

To the Editor:—If one sleeps on the near or farther side of a bed when a clock with radium paint on the hands and figures is about 6 inches from the near side of the bed and level with the top surface of the bed at its head, what effect will the radium in the paint have on the sleeper over a period of months or years? When one sleeps on the near side of the bed, the clock would be 1 or 2 feet from his head and when he sleeps on the farther side it would be 3 or 4 feet from his head. If the clock should be put on the floor under the side of the bed, would the radium have the same effects? Please omit name.

M.D., New York.

ANSWER.—Present-day knowledge of radioactive substances appearing on clock and watch dials prompts the belief that harm will not be produced under any of the conditions indicated in this query. This does not imply that there is no discharge of radioactive substances into the room. It is probably true that microchemical and microphysical measurements would establish both radium gases and rays in the close vicinity of the clock dial. A sensitive photographic film would probably be influenced when placed in contact with the dial itself. No less, the quantity of exposure is well within the tolerance of man, and no known harmful action would take place.

The latest discussion of this problem may be found in the *Journal of Industrial Hygiene* **13**:117 (April) 1931, in an article by Schlundt, McGavock and Brown.

CONGENITAL SYPHILIS

To the Editor:—A boy, aged 6 years, was referred to me for treatment because of a three plus Wassermann reaction. The child is apparently healthy, and physical examination reveals only a generalized adenopathy but no palpable spleen or liver. The test was made by his foster parents merely to make sure that the patient was free from syphilis. What treatment would you advise in this case? I had thought of starting with 0.3 Gm. of neoarsphenamine every week for eight injections and then giving a bismuth compound orally. Would a spinal fluid test be indicated? Please omit name and address.

M.D., Illinois.

ANSWER.—This boy, with generalized adenopathy and a three plus blood Wassermann reaction as the only physical evidences of congenital syphilis, will probably have to be regarded as having the disease and treated accordingly. It should not be forgotten that a well investigated history is of the utmost importance. Such a history probably cannot be obtained from the foster parents, in the case of this boy.

Without further informative history and with only the generalized glandular adenopathy as a definite physical observation, the serologic blood examination offers the best clue to a definite diagnosis. It is much safer, as a general rule, to use such laboratory observations as corroborative evidence in the diagnosis. In this case it would seem wise to repeat the blood Wassermann examination, and in addition to make the Kahn test on the patient's blood.

The treatment, if the diagnosis is established, may consist in the use of an arsenical in three different ways; intravenously, intramuscularly or orally. The arsenical treatment may be altered with a course of a preparation of bismuth or mercury, and a certain rest period between courses is absolutely essential.

The dosage for intravenous neoarsphenamine in children is 15 mg. per kilogram of body weight. If this 6 year old boy weighs between 40 and 50 pounds (from 18 to 23 Kg.), the dosage of 0.3 Gm. of neoarsphenamine would be correct. It would be safer to start with a smaller dose and work up to the maximum. Sulpharsphenamine for intramuscular injection may be used in the dosage of 20 mg. per kilogram of body weight. Acetarsone may be given by mouth, commencing with dosages of 5 mg. per kilogram of body weight, and increasing to 20 mg. per kilogram daily.

A spinal fluid examination would be indicated either before treatment was commenced or at the end of each course of treatment. The examination of the spinal fluid may be positive without definite neurologic signs, and treatment should be vigorously conducted to obtain as complete a cure as possible.

NONGONORRHEAL URETHRITIS

To the Editor:—A man, aged 28, single, who has had no venereal diseases, noticed a momentary itching in the urethra on the eighth day after exposure. The ninth day brought on itching periods of one or two minutes' duration and recurred from four to six times that day. On the morning of the tenth day there was a watery milky white drop in the meatus. There was no nocturia or frequency. The woman in the case was married and has no history of gonorrheal infection. The fact that she has not infected her husband lends truth to the history. When I saw the patient on the tenth day I could not obtain a smear. An anterior urethral injection of 10 per cent mild silver protein was given and the patient put on internal medication with a urinary antiseptic. The following morning, smears were obtained from the slightly moist urethra. Occasionally there was a milky drop in the meatus. All smears were negative for gonococci, but all smears showed pus cells and endothelial cells. Two or three of the earlier smears showed extracellular, gram negative diplococci diagnosed by different technicians as not gonococci. The first glass test of the urine showed many shreds, some of which sank to the bottom while others continued to float or remain suspended. There was no reddening or swelling of the meatus. The patient states that from four to six months prior to this occurrence he had used a prophylactic injection of a 1 per cent solution of the urinary antiseptic, which caused excruciating burning on urination for several days thereafter but that no discharge resulted. The patient has been treated with a 10 per cent solution of mild silver protein daily for the past six weeks. Some mornings a white drop of pus still shows up in the meatus. The smears have been negative for gonococci or any other bacteria. Another case, typical of many others, is that in which the subject has not been exposed to coitus for many months. There is a sudden urethral itching, followed by burning and frequency and then a scanty discharge of white pus, which is negative for bacteria. Can the first case be classified as a nongonorrheal infection? Is it likely that the prophylactic injection produced a stricture, which is the cause of the present trouble, or is it due to the last sexual exposure? Is the treatment as given proper or is it apt to prolong the occasional discharge? What is the best procedure? What is the etiology of the second case and what is the treatment? What is meant by a "strain"? What causes the formation of pus if no bacteria are present? Is there an increase in the nongonorrheal type of urethritis at the present time? If so, what is it due to? Please omit name.

M.D., Wisconsin.

ANSWER.—There has been an increase of instances of nongonorrheal urethritis in the male since the use of occlusive pessaries in order to prevent impregnation and the administra-

tion of urethral prophylactic injections became popular. Some female genitals show an idiosyncrasy for vulcanized rubber, and the insertion of such pessaries is apt to produce vaginitis and endocervicitis, which in turn may infect the male urethra. This is especially true if stem pessaries are used. Prophylactic urethral injections with solutions of high concentration are apt to produce a urethral discharge of various duration. Any damaging of the urethral epithelium may lead to the production of pus. The routine treatment of nongonorrheal urethritis with silver salts is liable to maintain the discharge for an indefinite period. The term strain is quite often used for the flaring up of old infections provoked by alcoholic or venereal excesses, particularly if they are simultaneously indulged in. It may also be mentioned that the drinking of beer that is not sufficiently aged occasionally produces a nongonorrheal discharge. The treatment of nongonorrheal urethritis should be an inactive one: bland diet, refraining from alcohol and administration of any of the so-called urinary antiseptics. The urine is acidified by the intake of some mineral acid.

PREDETERMINATION OF SEX BY CONTROLLING REACTION IN VAGINA

To the Editor:—An interested patient brought in a clipping from *Time* concerning predetermination of sex by alkalization or acidification, with an inquiry as to its scientific status. I have a recollection of a similar theory some twenty years ago, which I understand was ridiculed at the time and disproved. My impression is that this one is in the same category but I would appreciate your comment as authority to present to the inquirer, who rather takes it seriously. I warned her against the dangers of alkalosis and imbalance, and other dangers not to be ignored. This pseudoscientific stuff should not be given publicity, but when it is the profession has the duty of answering it intelligently. Please omit name.

M.D., California.

ANSWER.—In Unterberger's original work it was the alkalization and acidification of the vagina which—he claimed—determined the sex, and the patient was to take douches correspondingly. The quotation was wrongly made if a change of the alkali-acid balance of the body is to be effected, and, naturally, such an attempt might be disastrous.

Futh tried to verify Unterberger's statements and found that women who showed a low vaginal acidity did have a preponderance of boys, but this finding was probably accidental.

The extra chromosome theory of the production of sex seems to have the best scientific foundation. Attempts to influence sex in mammals by changes in environment have failed up to the present, and if an alkaline medium does affect the fertilization, it must be assumed that it changes the chromosome of the female-producing spermatozoid or it may impair the sperm itself.

One is entitled to a prolonged healthy skepticism in this matter. Furthermore, if one admits that the alkali can change such a momentous catastatic biologic action as the act of fertilization, one would logically fear the possibilities of other histologic or pathologic, perhaps catastrophic, changes in the resultant product of conception.

In one definite case in which the method was tried, unfortunately the soda douches produced a girl. The profession might be invited to publish individual experiences or the results of experiment.

TOXICITY OF CARBON DIOXIDE

To the Editor:—I have, within a comparatively short time, observed two fatalities under anesthesia in which carbon dioxide was given in addition to nitrous oxide and oxygen. Could the carbon dioxide be responsible? How toxic is carbon dioxide? Please omit name.

M.D., Massachusetts.

ANSWER.—Carbon dioxide, when administered with ample oxygen during or after anesthesia, is entirely nontoxic. The air of the lungs normally contains 5 per cent of carbon dioxide; from 7 to 10 per cent, when inhaled with ample oxygen, stimulates respiration and other vital functions. Experience indicates that a short inhalation of even as much as 20 per cent of carbon dioxide, provided ample oxygen is present, induces no ill effects on the heart or other organs. With ether anesthesia, in which an ample supply of oxygen is afforded, it is often advantageous to administer from 5 to 10 per cent of carbon dioxide to stimulate breathing; and the administration of carbon dioxide after anesthesia is the most effective known means of preventing postoperative pulmonary complications.

But a mixture of carbon dioxide with sufficient nitrous oxide to induce anesthesia necessarily contains an insufficient percentage of oxygen to support life. The concentration of nitrous oxide needed to induce anesthesia is close to that producing asphyxia. This is true even when the only other gas present is oxygen. The addition of carbon dioxide would reduce the oxygen still further. Carbon dioxide with oxygen should be used for resuscitation from the collapse that sometimes follows the asphyxia of nitrous oxide anesthesia. But carbon dioxide cannot without serious danger be combined with the simultaneous administration of nitrous oxide.

CONVULSIONS IN ECLAMPSIA

To the Editor:—Are convulsions per se in eclampsia or in a parturient woman dangerous and fatal in themselves, or is it alone the underlying disturbances leading to the coma and convulsions that demand one's whole attention? Is an effort to stop a severe convulsion by the inhalation of a few whiffs of chloroform justified during such an emergency?

WILLIS P. BAKER, M.D., Santa Ana, Calif.

ANSWER.—The convulsions of eclampsia carry a small amount of danger in themselves but they are not the main cause of death. The underlying toxemia, or whatever it is that causes the convulsions, is the serious element. The convulsions carry the following risks: If the cerebral blood vessels are brittle, a hemorrhage of the brain may result. If the convulsions are frequent, the products of muscular activity accumulate in the blood and the kidneys may not be able to eliminate them. The cyanosis produced by the convulsions may increase acidosis. The muscular spasms may overstrain an already weakened heart. During the convulsion, and the coma following, the patient may aspirate foreign matter into the lungs, causing pneumonia. A convulsion may throw the woman on a hot stove and in other ways accidental injuries may result, besides the frequent biting of the tongue.

In spite of all these offenses, the convulsion is less dangerous than the use of an anesthetic such as chloroform intended to suppress them. In the first place, by the time the anesthetic can get in its work the actual convulsion is over and all that has been done is to add to the woman's stock of poisons and to damage her kidneys and liver still more. The answer to the second question therefore is No.

SIMPLE METHOD OF BLOOD SUGAR ESTIMATION

To the Editor:—Can you recommend a reliable method of determining the blood sugar, less cumbersome than the Folin-Wu or the Benedict method?

P. N. L., Chicago.

ANSWER.—The Folin-Wu method (*J. Biol. Chem.* **41**:367 [March] 1920) gained widespread acceptance and popularity soon after its introduction, so much so that the values with this method were accepted as a standard for a number of years. However, the results with this method average about 22 mg. too high. The latest Benedict method (*J. Biol. Chem.* **92**:141 [June] 1931) gives blood sugar values that are materially lower, and probably comes close to giving the true dextrose content of the blood. Both of these copper methods require more chemical training, more complicated reagents and more care than the older trinitrophenol ("picric acid") method, first introduced by Lewis and Benedict (*J. Biol. Chem.* **20**:61 [Jan.] 1915). For example, with the Folin-Wu method it is essential that one have a standard closely approximating the unknown. With the trinitrophenol method one standard is adequate over the whole blood sugar range from 50 to 1,000 mg. The results with the older trinitrophenol method are slightly higher (6 or 7 mg.) than with the Folin-Wu method; but this added difference is of little consequence, since the Folin-Wu method averages about 22 mg. too high.

The simplest form of the trinitrophenol method is that described by Myers and Bailey (*J. Biol. Chem.* **24**:147 [Feb.] 1916). Trinitrophenol is the only reagent employed in addition to the dextrose standard, and one cannot easily make a mistake with the method. Sufficient trinitrophenol is used to precipitate the blood proteins and render the filtrate saturated. When the filtrate is heated with carbonate, the yellow sodium picrate is reduced to the reddish-brown sodium picramate in proportion to the amount of sugar present. The dextrose standard is made up in saturated trinitrophenol, which not only preserves the dextrose but also saves a subsequent step in the determination.

Briefly, the method is as follows: Two cubic centimeters of blood is diluted to 10 cc. by the addition of 8 cc. of water, and sufficient dry trinitrophenol (about 0.2 Gm.) is added to precipitate the proteins and render the solution saturated. After thorough stirring and shaking, the mixture is filtered. Three cubic centimeters of this filtrate (equivalent to 0.6 cc. of blood) is pipetted into a graduated test tube (sugar tube) and 3 cc. of the dextrose standard in saturated trinitrophenol, containing

0.6 mg. of dextrose, pipetted into a similar tube. To each tube is now added 1 cc. of 20 per cent sodium carbonate, and the carbonate is mixed with the trinitrophenol solution. The tubes are next placed in a beaker of boiling water for fifteen minutes and then cooled. When cool, the standard is diluted to 10 cc. and the unknown to some known volume (10, 15, 20 cc. and so on) approximating the color of the standard. If the standard is set at 10 mm. in the colorimeter, the dilution of the unknown times 100, divided by the reading of the unknown, will give the blood sugar in milligrams per hundred cubic centimeters.

As Somogyi has shown (*J. Biol. Chem.* **83**:157 [July] 1929), true figures for the blood sugar may be obtained with the Folin-Wu method after zinc precipitation. Myers and Root (*J. Lab. & Clin. Med.* **16**:890 [June] 1931) have similarly shown that zinc will remove the non-sugar reducing substances in the trinitrophenol method. However, if one is going to this trouble it is better to use one of the copper methods.

If one desires to make analyses on finger blood, the Folin micro method is probably the most satisfactory. (For 0.1 cc. of blood, see Folin and Malmros, *J. Biol. Chem.* **83**:115 [July] 1929. Folin and Svedberg, ibid. **88**:85 [Aug.] 1930. For 0.025 cc. see Jeghers and Myers, *J. Lab. & Clin. Med.* **15**:982 [July] 1930.) The method is considerably more complicated than the trinitrophenol method.

WORMS IN BURIED BODIES

To the Editor:—I have a patient who works in a cemetery as a grave digger. In the course of his work he has helped exhume many bodies which had been buried from three weeks to fifty years. He tells me that it is no literary myth that "worms" attack the bodies of a large percentage of those buried. He mentioned seeing maggot-like worms on the face of a corpse that had been buried only three weeks, in which case both the outer box and the coffin were in good condition. He mentioned having seen many bodies that had been buried for fifteen or twenty years in which the coffin had decayed, allowing the earth to come in contact with the remains, which "were alive with worms." While perhaps this is not strictly a medical query, I should like to know how authentic these statements are, the zoological classification of these "worms," where they come from, and how they get there. Please omit name.

M.D., Texas.

ANSWER.—Generally speaking, the statements of the grave digger are in accord with the facts. Maggots may make their appearance on the cadaver a few hours after death, especially in warm weather. Sometimes maggots appear in unbelievably large numbers. Apparently the inroads on cadavers of various insects, especially beetles of different species (Coleoptera, Lepidoptera, Silphidae, Histeridae, Tenebrionidae) may follow a more or less regular course, owing perhaps, it has been thought, to the different odors that develop. It is known that certain beetles make their appearance after months or even years. The order will vary with season and locality, stage and progress of putrefaction. Enough has been said to show that the entomology of the cadaver is an intricate subject, of which only one or two high points can be touched here. The effect of modern American methods of "embalming" on the cadaveric fauna has not been studied.

HYPOTHYROIDISM

To the Editor:—A woman, aged 26, had a thyroidectomy three years ago. Three months later her periods began to get irregular. She would pass large clots of blood for three or four months at a time and would have considerable pain. One year after operation she began to lose her energy, and she noticed that her hair became dry and that she was inactive sexually. She fainted easily and easily became nervous, but in a different manner from before. Trifling things, such as moving signs, bothered her. I saw her about this time and my diagnosis was hypothyroidism, so desiccated gland was given in good amounts, with excellent results for a time. This fall, however, the symptoms became much worse. She has been taking 5 grains (0.3 Gm.) of desiccated thyroid every other day for more than a year, and an increase in the amount taken did no good. She states that she has a peculiar taste on her tongue and that her body seems to crave something. I have given her four injections of a soluble extract from the anterior lobe of the pituitary, with no results. Have I stopped too soon or what does this patient need? Please omit name.

M.D., Nebraska.

ANSWER.—This patient's response to thyroid medication suggests strongly that the diagnosis of hypothyroidism was correct. However, all users of thyroid, particularly in postoperative thyroidectomy patients, have learned the necessity of controlling thyroid doses by frequent basal metabolism readings. It is well known that there is no mathematical standard of thyroid dosage and that some patients present marked symptoms of myxedema without great changes in the basal metabolism. However, it is also recognized that a basal metabolism considerably lower than normal may be associated with no active signs of myxedema.

In the present instance it would seem wisest to find the basal metabolic rate and to give sufficient thyroid to raise it to normal. The dosage necessary to attain such an objective may be considerably higher than the amount indicated. After all, 0.3 Gm. of desiccated thyroid every other day is not a large dose in a severe case of hypothyroidism.

It is also suggested that a pelvic examination is indicated to exclude any pathologic condition of the pelvic organs. Naturally, any abnormal condition of the pelvic organs should be corrected, and if there is any secondary anemia this also should receive attention. The dose of anterior pituitary might well be continued if the patient is not relieved by larger thyroid medication.

One other factor must be considered, and that is the well known psychologic disturbances frequently associated with the diseases of the thyroid gland. It is, of course, impossible to comment on this in this patient except to suggest that it be looked into.

BOILED OR RAW MILK IN INFANT FEEDING

To the Editor:—When, or at what age, is it safe to give a young child or baby "certified," or grade A, raw milk? Many physicians, including my own, advise boiling grade A milk. How much value is there in buying grade A milk, which is more expensive, if one has to boil it and kill most if not all of the vitamins contained in it? It would seem to me that, for the average family of small income, it would be just as well to buy regular pasteurized milk and boil that. Is this assumption correct? My particular reason for writing is to determine at what age I may safely stop giving boiled milk to my baby. Could one stop boiling milk sooner if pasteurized milk was used instead of grade A milk? Several books I have consulted say that boiled milk should be used until the child is 2 years old. Of course, I understand that the vitamin deficiency may be made up by appropriate doses of cod liver oil and orange juice. I ceased boiling milk for my first child at about 1 year, and did not have any apparent trouble.

D.D.S., Michigan.

ANSWER.—The production of certified milk has been an invaluable gift of the dairy industry to the consumers of milk and milk products and has demonstrated that it is possible to provide clean milk.

There is a division of opinion whether all milk should be boiled, though there is something to be said on both sides of the question. Boiling milk, including that which is certified, destroys the possibility of bacterial invasion, as even certified milk may become infected with pathogenic germs in transport or in the home.

All milk that is used for infant feeding should be as clean and free from bacterial invasion as possible, and merely boiling the milk does not remove filth or toxic products. Boiled milk still retains its vitamin A content; while it is true that boiling milk destroys vitamin C, vitamin A is not affected. The deficiency may be supplied by the use of vitamin-containing substances.

It is equally important to recall that boiling cow's milk renders it more digestible, softens the curd and prevents indigestion and diarrheal disorders. Whether one should boil pasteurized milk depends on the source of the milk supply and the efficiency of pasteurization, but the fact still remains that boiling even pasteurized milk renders the curd softer and the milk more easy of digestion.

The question at what age one may stop boiling the baby's milk may be replied to by asking another question: Why stop boiling the milk, if by this simple process one renders it more digestible and destroys the numerous disease dangers that lurk in cow's milk? Drinking raw milk is an acquired taste, like eating raw meat. Many persons correctly have a repulsion against partaking of either in the raw state.

PERSISTENT EDEMA OF FOOT AFTER OPERATION

To the Editor:—I have had quite a few cases of persistent edema of a foot following fracture of the base of metatarsal bone, and have not been able to clear this up. I have performed Kondoleon operations, only to have this stubborn edema return. Kindly advise as to treatment. Please omit name.

M.D., New York.

ANSWER.—The patient should be put to bed. Hot fomentations should be applied, saturated epsom salt solution being used, combined with elevation of the foot and lower part of the leg on one pillow. Radiant heat, gentle massage and the application of a long foot elastic bandage going from just above the ankle to the tips of the toes should be helpful. The elastic is to be worn when the patient is out of bed, and the application when the patient is in bed with the foot elevated. A high lace shoe should be worn. Special exercises for the transverse arch should be done. The feet should be massaged twice daily with equal parts of ointment of rose water and any anodyne ointment, and foot and leg contrast sprays should be used.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, March 14. Sec., Dr. Harry C. DeVighne, Juneau.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Milwaukee, June 12. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The *written* examination will be given in cities of the United States and Canada where there is a Diplomate who may be empowered to conduct the examination, April 1. The *general oral, clinical and pathological* examination will be held in Milwaukee, June 13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Milwaukee, June 12. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: Los Angeles, Feb. 27 to March 2. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, March 14-15. *Endorsement.* Hartford, March 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, March 14. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

IDAHO: Boise, April 4. Commissioner of Law Enforcement, Hon. Emmitt Pfost, Boise.

MAINE: Portland, March 14-15. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, March 14-16. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

MINNESOTA: *Basic Science.* Minneapolis, April 4-5. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

MONTANA: Helena, April 4. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, March 16-17. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, March 14-15. Sec., Dr. J. M. Byrum, Shawnee.

PUERTO RICO: San Juan, March 7. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, April 6-7. Dir., Dr. L. A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, March 23-24. Sec., Dr. A. B. DeLoach, Medical Arts Bldg., Memphis.

WEST VIRGINIA: Charleston, March 14. Sec., Dr. W. T. Henshaw, State Health Department, Charleston.

New York June Report

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held in Albany, Buffalo, New York and Syracuse, June 27-30, 1932. The examination covered 9 subjects and included 10 questions. An average of 75 per cent was required to pass. Six hundred and three candidates were examined, 471 of whom passed and 132 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Yale Univ. School of Med	(1925), (1929), (1930), (1932)		4
Georgetown University School of Medicine	(1932, 9)		9
George Washington Univ. School of Med	(1931, 2), (1932)		3
Howard University College of Medicine	(1929)		1
University of Georgia Medical Department	(1929)		1
Loyola University School of Medicine	(1932, 2)		2
Northwestern University Medical School	(1931)		1
Rush Medical College	(1931), (1932, 4)		5
University of Louisville School of Medicine	(1930)		1
Johns Hopkins Univ. School of Med	(1926), (1929), (1931)		3
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931), (1932, 19)		20
Boston Univ. School of Med	(1928), (1929), (1930), (1932, 6)		9
Harvard Univ. Med. School	(1924), (1929), (1930), (1932, 3)		6
Tufts College Med. School	(1928), (1929), (1931, 3), (1932)		6
University of Michigan Medical School	(1929)		1
St. Louis University School of Medicine	(1930), (1932)		2
Washington University School of Medicine	(1932, 3)		3
Creighton University School of Medicine	(1932, 2)		2
Albany Medical College	(1931), (1932, 16)		17
Columbia Univ. Coll. of P. and S.	(1930), (1931), (1932, 22)		24
Cornell Univ. Med. Coll.	(1929), (1930, 2), (1931, 2), (1932, 16)		21
Long Island College of Medicine	(1931, 2), (1932, 77)		79
New York Homeopathic Medical College and Flower Hospital	(1916), (1932, 52)		53
Syracuse University Coll. of Med.	(1926), (1931), (1932, 30)		32
University and Bellevue Hosp. Med. Coll.	(1930), (1932, 79)		80
University of Buffalo School of Med	(1931), (1932, 34)		35
University of Rochester School of Medicine	(1932, 6)		6
University of Cincinnati College of Medicine	(1932)*		1
Hahnemann Med. College and Hospital of Philadelphia	(1932)		1
Jefferson Medical College of Philadelphia	(1931), (1932, 4)		5
Temple University School of Medicine	(1932)		1
University of Pennsylvania School of Med	(1930), (1931)		2
Woman's Medical College of Pennsylvania	(1931)		1
Vanderbilt University School of Medicine	(1929)		1
University of Texas School of Medicine	(1926)		1
University of Vermont College of Medicine	(1932)		1
Medical College of Virginia	(1929)		1
Dalhousie University Faculty of Medicine	(1932, 2)		2
Queen's University Faculty of Medicine	(1930), (1931, 2)		3
McGill University Faculty of Medicine	(1929), (1932, 7)		8
Medizinische Fakultät der Universität Wien	(1931, 3)†		3
Université Catholique de Louvain Faculté de Médecine	(1930)		1
King's College Hospital Medical School, University of London Faculty of Medicine	(1932)†		1
Medizinische Fakultät der Thüringischen Landesuniversitat, Jena	(1925), (1928)		2
Regia Università di Napoli. Facoltà di Medicina e Chirurgia	(1923)		1
Regia Università di Palermo degli studi Facoltà di Medicina e Chirurgia	(1928)		1
Regia Università di Roma degli studi Facoltà di Medicina e Chirurgia	(1928)		1
University of Edinburgh Faculty of Med	(1931), (1931, 4)†		5
Osteopaths			2

College	FAILED	Year Grad.	Number Failed
Georgetown Univ. Sch. of Med	(1928,2), (1931, 2), (1932, 9)		13
George Washington University School of Medicine	(1931, 2)		2
Howard University College of Medicine	(1928), (1930)		2
Loyola University School of Medicine	(1931, 2)		2
University of Kansas School of Medicine	(1932)		1
Johns Hopkins University School of Medicine	(1927)		1
University of Maryland School of Medicine and College of Physicians and Surgeons	(1929), (1932)		2
Boston University School of Medicine	(1932)		1
Tufts College Medical School	(1928)		1
University of Michigan Medical School	(1930)		1
St. Louis University School of Medicine	(1928), (1930)		2
Washington University School of Medicine	(1928), (1931)		2
Creighton University School of Medicine	(1929), (1930)		2
University of Nebraska College of Medicine	(1930)		1
Albany Medical College	(1932, 2)		2
Columbia Univ. Coll. of Phys. and Surgs	(1929), (1932, 2)		3
Cornell University Medical College	(1931), (1932)		2
Long Island College of Medicine	(1930), (1931), (1932, 5)		7
New York Homeopathic Med. Coll. and Flower Hosp.	(1932, 7)		7
Syracuse University College of Medicine	(1931), (1932, 4)		5
University and Bellevue Hospital Medical College	(1927), (1931, 2), (1932, 6)		9
University of Buffalo School of Medicine	(1932, 8)		8
University of Rochester School of Medicine	(1931)		1
Hahnemann Medical College and Hospital of Philadelphia	(1931), (1932)		2
Jefferson Medical College of Philadelphia	(1930)		1
Temple University School of Medicine	(1931)		1
Medical College of the State of South Carolina	(1931)		1
University of Vermont College of Medicine	(1931), (1932, 2)		3
Medical College of Virginia	(1932)		1
Queen's University Faculty of Medicine	(1927), (1930)		2
McGill University Faculty of Medicine	(1931, 2)		2
Karl-Franzens-Universität Medizinische Fakultät, Graz	(1931)		1
Medizinische Fakultät der Universität Wien	(1926), (1926)†		2
Deutsche Universität Medizinische Fakultät, Prag	(1925)		1
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen	(1930)†		1
Queen's University Faculty of Medicine, Ireland	(1925)		1
Regia Università di Genova degli studi Facoltà di Medicina e Chirurgia	(1930), (1931)†		2
Regia Università di Napoli. Facoltà di Medicina e Chirurgia	(1923, 2), (1927, 2), (1929)		5
Regia Università di Palermo degli studi Facoltà di Medicina e Chirurgia	(1920), (1920),† (1928)		3
Regia Università di Roma degli studi Facoltà di Medicina e Chirurgia	(1928),† (1931, 2)		3
Universitatea Regele Ferdinand I-iu din Cluj Facultatea de Medicină şi Farmacie	(1926)		1
University of Aberdeen Faculty of Medicine	(1905)		1
University of Edinburgh Faculty of Medicine	(1931)†		1
Osteopaths			20

Mr. Hamilton also reports 154 physicians licensed by endorsement from May 1 to Nov. 1, 1932. The following colleges were represented:

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Stanford University School of Medicine	(1929)		California
University of Colorado School of Medicine	(1919)		Colorado
Yale University School of Medicine	(1929)		N. B. M. Ex.
Georgetown University School of Medicine	(1929) New Jersey, (1931), (1932) Maryland		
George Washington University School of Medicine	(1930)		Maryland
Howard University College of Medicine	(1930) Maryland, (1931) Maryland, N. B. M. Ex., Virginia		
Emory University School of Med	(1927) Georgia, (1931)		N. B. M. Ex.
Loyola University School of Medicine	(1932) Iowa,		N. B. M. Ex.
Rush Medical College	(1926) Illinois, (1931)		N. B. M. Ex.
College of Physicians and Surgeons of Chicago	(1910)		Wisconsin
Indiana University School of Medicine	(1927), (1931)		Indiana
State University of Iowa College of Medicine	(1926), (1928), (1929, 2), (1931, 2) Iowa		
University of Kansas School of Medicine	(1929)		N. B. M. Ex.
University of Louisville Medical Department	(1912)		Penna.
Tulane University of Louisiana School of Medicine	(1930)		N. B. M. Ex.
College of Physicians and Surgeons of Baltimore	(1906) Maryland, (1910) Massachusetts		
Johns Hopkins University School of Medicine	(1921) Minnesota, (1928, 2) N. B. M. Ex., (1926), (1927), (1928), (1929), (1930), (1931) Maryland		
University of Maryland School of Medicine	(1900)		Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1916), (1931, 2), (1932)		Maryland
Boston University School of Medicine	(1916)		Virginia
Harvard University Medical School	(1926), (1929, 4), (1930), (1931) N. B. M. Ex.		
Tufts College Medical School	(1926) Massachusetts, (1930)		N. B. M. Ex.
University of Michigan Department of Medicine	(1912)		Michigan
University of Michigan Medical School	(1924, 2)		Michigan
University of Minnesota College of Med. and Surg	(1899)		Minnesota

University of Minnesota Med. School..(1922), (1928), (1929) Minnesota
St. Louis University School of Med..(1914) Alabama, (1917) Michigan
Washington University School of Medicine.....(1929) N. B. M. Ex.
John A. Creighton Medical College.....(1911) Illinois
Albany Medical College.....(1931, 3) N. B. M. Ex.
Columbia University College of Phys. and Surgs...(1931, 5) N. B. M. Ex.
Cornell Univ. Med. Coll...(1928, 2), (1929), (1930, 2), (1931) N. B. M. Ex.
Long Island College Hospital.....(1930) N. B. M. Ex.
Syracuse University College of Medicine.....(1926), (1929) N. B. M. Ex.
University of Buffalo School of Medicine.....(1931) N. B. M. Ex.
University of Rochester School of Med..(1929, 2), (1931, 2) N. B. M. Ex.
Ohio State University College of Medicine.....(1930) Ohio
University of Cincinnati College of Medicine.....(1925) Ohio
Western Reserve University School of Medicine.....(1930) Ohio
Jefferson Medical College of Philadelphia.....(1904) New Jersey
Medico-Chirurgical College of Philadelphia.....(1915) Penna.
Temple University School of Medicine.....(1931) Delaware
University of Pennsylvania Department of Medicine...(1908) New Hamp.
University of Pennsylvania School of Medicine.....(1927) N. Carolina
Medical College of the State of South Carolina.....(1931) N. Carolina
Meharry Medical College.....(1931) Maryland, Tennessee
University of Tennessee College of Medicine.....(1925) Louisiana, (1930) Tennessee
Vanderbilt University Sch. of Med....(1929), (1930), (1931) Tennessee
Baylor University College of Medicine.....(1931) Texas
University of Texas School of Med...(1927), (1931), (1932) Texas
University of Vermont College of Medicine.....(1921) Penna., (1931, 2) N. B. M. Ex.
Medical College of Virginia.....(1931) N. Carolina, (1928), (1930), (1931) Virginia
University of Virginia Dept. of Med..(1918), (1924), (1927) Virginia, (1930) N. B. M. Ex.
Marquette University School of Medicine.....(1932) Wisconsin
Queen's University Faculty of Medicine.....(1915) Ontario, (1928) Wisconsin
University of Toronto Faculty of Medicine.....(1926) Ontario
McGill University Faculty of Medicine.....(1897) Washington, (1922) Alberta, (1930, 2), (1931, 3) N. B. M. Ex.
Leopold-Franzens-Universität Medizinische Fakultät, Austria .....(1919) Wisconsin
Medizinische Fakultät der Universität Wien(1890),† (1921, 2)† Diploma, (1919) Illinois, (1928) New Jersey
Universidad Nacional Facultad de Medicina, El Salvador .....(1907) California
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau .....(1925)† Germany
Medizinische Fakultät der Thüringischen Landesuniversität, Jena .....(1922)† Germany
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest..(1910),†(1914),†(1917),†(1924)† Diploma
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs .....(1926)† Diploma
Regia Università di Napoli. Facoltà di Medicina e Chirurgia .....(1923) Diploma
University of Malta Faculty of Med. and Surg.....(1922)† Malta
Universitatea Regele Ferdinand I-iu din Cluj Facultatea de Medicină şi Farmacie.....(1921)† Diploma
Licentiate of the Royal College of Physicians, Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Phys. and Surgs. of Glasgow.....(1929-1932) N. B. M. Ex.
University of Glasgow Medical Faculty.....(1915)† Diploma
Université de Lausanne Faculté de Médecine.....(1928)† Puerto Rico
Faculté Française de Médecine de l'Université de St. Joseph, Beyrouth .....(1920)† Diploma
Imperial University of St. Vladimara, Kiev.....(1897)† Michigan
Osteopaths .....New Jersey, 2

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of an internship.

† Verification of graduation in process.

Minnesota October Report

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, Oct. 18-20, 1932. The examination covered 12 subjects and included 60 questions. An average of 75 per cent was required to pass. Thirty-six candidates were examined, all of whom passed. One physician was licensed by reciprocity and 2 physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1929)	92.4
Northwestern University Medical School		(1930)	92.4
Rush Medical College		(1931) 94.1, (1932)	89.1
Johns Hopkins University School of Medicine		(1931)	85.6
University of Minnesota Medical School		(1930) 91.1, 91.4, (1931) 86.3,* 87.2,* 87.4,* 87.5,* 88.5,* 90.4,* 90.4,* (1932) 85.2,* 86, 86,* 86.3, 86.6,* 87.1, 87.3, 87.5,* 88.4,* 88.4,* 89.4, 90.4, 91.3,* 92.2, 92.4, 93.1	
University of Nebraska College of Medicine		(1931)	94.3
University of Pennsylvania School of Medicine		(1932)	89.5
Baylor University College of Medicine		(1931)	89.4
University of Toronto Faculty of Medicine		(1929)	91.4
University of Western Ontario Medical School		(1929)	88.3
McGill University Faculty of Medicine		(1929)	90.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Jefferson Medical College of Philadelphia		(1927)	California

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
School of Medicine of the Division of Biological Sciences, University of Chicago		(1931)	N. B. M. Ex.
University of Minnesota Medical School		(1932)	N. B. M. Ex.

* These applicants have received an M.B. degree and will receive an M. D. degree on completion of an internship.

Book Notices

Children's Tonsils In or Out: A Critical Study of the End Results of Tonsillectomy. By Albert D. Kaiser, M.D., Associate Professor of Pediatrics, University of Rochester Medical School. Cloth. Price, $5. Pp. 307, with 26 illustrations. Philadelphia & London: J. B. Lippincott Company, 1932.

It is a pity that Dr. Kaiser's well documented book did not appear some years ago, when the craze to remove tonsils was at its height; for Dr. Kaiser has the figures. For ten years he observed thousands of tonsillectomized children and others not operated on, as controls. With authority, this work states what many have suspected. Tonsillectomy is far from the cure-all that it was said to be; it failed to help or cure many ailments in which the relationship between the tonsil and the illness was, to say the least, far fetched; indeed, it frequently does not relieve the ailments that infected tonsils were strongly believed to cause. The well performed adenoidectomy in the child really suffering from adenoid obstruction gives fine results in a high percentage of instances. Were the removal of adenoids an operation done by itself, there would be little complaint as to the end-result. The theory of focal infection, however, threw a great white light on the tonsils. In the wave of enthusiasm following the promulgation of an idea that had much truth in it, tonsils of all kinds were sacrificed with little thought. The benefits of adenoidectomy were lost sight of in the disappointing results following so many tonsillectomies. One wonders, by the way, whether tonsillectomy would have been nearly so common if the technical difficulties of removal had been greater. Dr. Kaiser's figures show that tonsillectomy is of value in preventing some ailments. Many others are aggravated or recur more frequently after tonsillectomy, and still others appear after the operation that were absent prior to it. For instance, attacks of laryngitis are not much improved; attacks of bronchitis are even more prevalent among the tonsillectomized children of certain ages. After 3 years of age, Kaiser states, a child with suppurative otitis media is as likely to develop mastoiditis with the tonsils and adenoids removed as when they are present. This book should be in the hands of every physician; it is a much needed corrective to abuses that physicians and the public itself have become increasingly aware of in the last few years.

Anatomie des Menschen: Ein Lehrbuch für Studierende und Ärzte. Von Hermann Braus, Weil. o. ö. Professor an der Universität, Würzburg. Band III: Centrales Nervensystem. Von Curt Elze, o. ö. Professor an der Universität Rostock. Cloth. Price, 14.80 marks. Pp. 234, with 126 illustrations. Berlin: Julius Springer, 1932.

This volume covers the central nervous system. The original plan would have included in it also the peripheral nervous system but the plan was changed because of Braus's death in 1924 after he had prepared the first volume (1920) and the second (1924). Prof. Curt Elze of Rostock prepared and edited a second edition of the first volume, in 1929, and now this third volume. The first two volumes are admirable. Structure and function are combined and identified. The living human body is regarded as the interplay of various energies in the body and in its environment. This characteristic brings Braus's book into accord with fundamental biologic conceptions. Through it students get facts and some understanding of them. In the present volume Professor Elze maintains the standard and quality of the first two. The general section (pp. 1-13) emphasizes the unity of the nervous system and its peripheral connections. Simply, clearly and effectively, function appears as the key to structure. Structural elements (cells, fibers, nerves, pp. 13-30) are treated briefly and clearly, with exceptionally good illustrations. The general account of the brain and cord is distinguished by subordination of morphologic concepts to structural and functional unity. Artificial simplification by arbitrary subdivision—a misleading defect in many textbooks—does not distort the truth so much in this book. The presentation of the cortex is conservative in theory and constructive in suggestion. The little that is known and the much more that is unknown appear in sharp relief. Cortical localization is clearly and graphically presented in as true a picture of cortical mechanism as the general student can assimilate. There is a judicious balance between mosaics of definite "centers" and equipotential dispersal of totalizing func-

tions. Conscientious neurologists may think parts (such as speech) are dogmatic, but they are not obscure and the student who assimilates the spirit of the book will make of clear conceptions a basis for further and clearer thought. The book is well illustrated, many of the illustrations being original. The publisher's work makes the book a satisfaction in itself. A concluding volume covering the peripheral nerves, the sympathetic nervous system, the sense organs and the blood and lymph vessels of the nervous system is in preparation.

Annual Review of Biochemistry. Volume I. Edited by James Murray Luck, Stanford University. Cloth. Price, $5. Pp. 724. Stanford University: Stanford University Press, 1932.

The first volume of this timely annual review contains thirty chapters on special topics in biochemistry. The advisory committee is to be congratulated on the selection of the subject matter covered and in general on the choice of authors. It is a truly international undertaking from the standpoint of the literature covered as well as with regard to the selection of authors. In addition to the obvious and usual topics in biochemistry, the volume includes the following more unusual but welcome reviews: permeability, by Höber; the rôle of water in the structure and properties of protoplasm, by R. A. Cortner; the metabolism of brain and nerve, by E. G. Holmes; chemical embryology, by Joseph Needham; the terpenes, saponines and closely related compounds, by Ruzicka; the chemistry of bacteria, by Stephenson; immunochemistry, by Michael Heidelberger, and the biochemistry of the fungi, by N. N. Iwanoff. At the close of each chapter appears a bibliography, and the book closes with an extensive index of names of investigators.

Sexual Pathology, Being a Study of the Abnormalities of the Sexual Functions. An Exhaustive Treatise on Sexual Symbolism, Hypereroticism, Impotence, etc., Based Upon Research, Observations and Recent Clinical Data Gathered at the Institute for Sexual Science in Berlin. By Magnus Hirschfeld, M.D. Authorized translation by Jerome Gibbs. Advanced Sexual Science Series. Cloth. Price, $5. Pp. 349, with 3 illustrations. Newark, N. J.: Julian Press, 1932.

This volume is divided into three parts: (1) sexual symbolism; (2) hypereroticism; (3) impotence. It is an excellent outline of the subject and quite scientific in its consideration. It seems, however, to offer little that is not already available in many other books on the subject.

The Cardiac Output of Man in Health and Disease. By Arthur Grollman, Ph.D., M.D., Associate Professor of Physiology in the Medical School of the Johns Hopkins University. Cloth. Price, $4. Pp. 325, with 15 illustrations. Springfield, Ill., & Baltimore: Charles C. Thomas, 1932.

The output of the heart is at present receiving wide attention in clinical and physiologic laboratories interested in the circulatory system. It is highly probable that the determination of the cardiac output will soon take its place with other necessarily available special laboratory tests, such as electrocardiograms, basal metabolic rate determinations and roentgenograms. The author presents this timely subject in a manner at once scholarly and practical. An excellent historical survey accompanied by a comprehensive bibliography introduces the reader to the details of the author's method for determining the output of the heart. This technic is lucidly explained and, for certain purposes, is probably the most satisfactory one now available. It is a "foreign gas," indirect method in which acetylene has been shown to be the gas of choice. The remainder of the book is largely devoted to the presentation of the results of studies made on healthy individuals under varying physiologic and pharmacologic conditions. A few concepts, new at least to clinicians, are offered, such as those concerning the relative work of the heart with the body at rest, during digestion, and during mild and strenuous exercise. The method applied to diseased hearts has not been sufficiently used, as the author admits, to enable one to evaluate it properly. It would seem to have definite value in estimating the chief function of the heart from time to time in a given case under different types of therapy. By the author's own protocols it is unable to differentiate between the seriousness of various valvular lesions in a stage of clinical compensation. In cases of myocardial insufficiency of whatever etiology with edema of the lungs, the method has been questioned in theory by several investigators in the same field. The author defends, somewhat polemically, in an otherwise obviously objective work his contention that it is reliable in selected cases of congestive heart failure. In spite of the uncertainty expressed with reference to some of the clinical applications of the author's method, the monograph as a whole is an excellent one and should be of value to clinicians and physiologists alike.

Soviet Russia As I Saw It: Its Accomplishments. Its Crimes and Stupidities. By Dr. William J. Robinson. Cloth. Price, $2. Pp. 224. New York: International Press, 1932.

Dr. Robinson had been for years convinced that the Russian system since the revolution represented the salvation of mankind and that it would provide the end of war and freedom from poverty and distress. He was so certain of this that he wrote down his credo before he left finally for a trip to Russia. When he returned, he was a greatly disappointed man. He had found Russia full of filth, the working man exploited, the tourists exploited by special show places arranged for their enlightenment as a form of propaganda, transportation disorganized, the people hungry and no food available. Those who have listened to the romance emanating from the propaganda bureaus of Russia will find Dr. Robinson's account most interesting and a certain corrective for the rainbow through which they have been gazing on the Russian situation.

Klima und Tuberkulose. Von Prof. Dr. V. Conrad, Prof. Dr. W. Hausmann, Prof. Dr. A. Bacmeister, Dr. H. Lossnitzer, Dr. Walter Behrend und Dr. M. Gähwyler. Nr. 46, Tuberkulose-Bibliothek, Beihefte zur Zeitschrift für Tuberkulose. Herausgegeben von Prof. Dr. Lydia Rabinowitsch. Paper. Price, 11.50 marks. Pp. 112, with 44 illustrations. Leipzig: Johann Ambrosius Barth, 1932.

Revealing a revived interest in climate, several books came from the German press in 1932 containing the progress of knowledge on the physiology of climate and of climate in relation to disease. The present work begins with a scholarly chapter by Conrad on the physical basis of climate. Suitable quotations are drawn from the poet-scientist Goethe to head each section of this scientific contribution. Meteorology in all its aspects is completely discussed. The increase in the ozone content of the atmosphere in thunderstorms and at high altitudes and the relation of ozone to radiation are matters of interest. The iodine content of the atmosphere is increased in regions that are sources of iodine. At high altitudes, far inland, salts identical with those of sea water are found in the atmosphere. Benjamin Franklin is credited with the first suggestions that volcanic dust might affect climate. In this regard it may be recalled that the late Dr. Harry Marshall of the University of Virginia pointed out that the disappearance of the dinosaur on all continents was coincident with the unusual volcanic activities of that period. The inference was drawn by Marshall that the excessive atmospheric dust interfered with the actinism so necessary to the dinosaur. Other sources of dust in the atmosphere are mentioned by Conrad, including the desert dust storms, such as the "black blizzards" of Arizona and the heavy smoke-laden air of cities. The effect of the various atmospheric contents on radiation is analyzed. Aqueous vapor, carbon dioxide gas and ozone absorb in a high degree the longer wave radiations. In winter there is twice as much ultraviolet radiation at an altitude of 6,000 feet as there is at the level of the sea; and while there is less in summer, on account of clouds, the high altitudes average for the year much more ultraviolet radiation, with smaller fluctuations, than is the case at sea level. Conrad concludes that moderate altitudes are the best locations for sanatoriums.

Bacmeister and Lossnitzer agree with this conclusion and analyze the climatic conditions of moderate altitudes. They point out that the present tendency to collapse therapy overlooks the importance of regarding tuberculosis as a general disease. Behrend gives an historical sketch of the climate of the sea coast in relation to scrofula. Behrend also presents a series of roentgen reproductions illustrating the recovery of patients with pulmonary tuberculosis at the seashore. Gähwyler of Arosa stresses the value of the higher altitudes in the treatment of tuberculosis. Tables are given comparing the hours and intensity of sunshine at the Swiss health resorts with towns at sea level. Gähwyler concedes that experimentation with tuberculous animals has not been able to determine the relative value of rarefied air, of increased radiation, or of a dry atmosphere. While children do not escape infection with tuberculosis at Arosa, the disease rarely becomes generalized and advanced phthisis is unknown. In general, the writers

of this monograph agree that the dry atmosphere and increased radiation of moderate and of high altitudes tend to lift the bodily resistance. Complete proof is not offered that climatic treatment of tuberculosis has a specific value. The treatment of tuberculosis at altitudes is time honored and it may be that scientific discoveries of the future will substantiate the value of altitude. Most of the articles are accompanied by extensive bibliographies.

Medicolegal

Advertising as Unprofessional and Dishonorable Conduct

(Sapero v. State Board of Medical Examiners (Colo.), 11 Pac. (2d) 555)

The defendant was a licensed physician. He had practiced medicine for upward of thirty-five years. He visited various parts of the state from time to time advertising his comings in local newspapers and, in some recent advertisements at least, announcing his ability to treat successfully certain named diseases. The state board of medical examiners deemed his publication of certain advertisements in 1930 and 1931 unprofessional and dishonorable conduct within the meaning of the law and revoked his license to practice. The revocation was upheld by the district court, city and county of Denver, and the defendant carried the case to the Supreme Court of Colorado. There counsel for the board contended that the power to make final decision with respect to such matters had been committed to the board by the General Assembly, and that even though a conclusion of the board was erroneous, it was not subject to review by certiorari. But, said the Supreme Court, courts cannot delegate their judicial duties. The findings of the board are persuasive, but not conclusive. The board has power in the first instance to decide what constitutes unprofessional conduct. If, however, it abuses that power, the court will reverse the board's judgment.

Various grounds for the revocation of licenses are stated in the law (section 4536, C. L. 1921). Among them are certain named kinds of advertising, but it was not claimed that the advertising in this case came within any of the condemned classes. The complaint alleged "unprofessional or dishonorable conduct," and evidence of certain advertising, not of any kind specifically condemned by law, was held by the board of medical examiners to be proof of such conduct. In support of its action, the board claimed that the board itself had legislative power, delegated to it by the General Assembly. But, said the Supreme Court, the General Assembly cannot delegate such power, and the court could find no place in the medical practice act where it had even attempted to do so. It was impossible, as well as unnecessary, for the General Assembly to anticipate all the evil deeds that the words "immoral, unprofessional or dishonorable" were intended to cover, but the law enacted by the Assembly needed no reinforcement by supposed legislation by the board of medical examiners. The argument that the board of medical examiners is more capable than any other agency of determining the standards of the medical profession and hence should be the sole judge of the appellant's conduct was regarded by the court as wholly beside the point. A physician's license cannot be revoked merely for violating professional ethics or the rules of a board of health; to be actionable, the offending conduct must amount to a breach of law.

The appellant had been advertising for thirty-five years by sufferance at least. He had, after a previous informal hearing before the board, promised to modify his advertising to meet objection that had been raised to it, and he had kept faith. These extenuating circumstances, the Supreme Court suggested, called for an exercise of leniency, and a major punishment might amount to a great abuse of discretion. Even if the offending advertisements were within the purview of the statute, a milder penalty should have been considered under the circumstances. If the appellant's advertisements are repeated and if he is then charged with an offense under the statute and with nothing else, there will be time enough to consider the question of his culpability.

In a specially concurring opinion, Butler, J., called attention to the fact that legislation authorizing the revocation of a physician's license must, to be valid, bear a fair relation to the public health, safety, morals, or welfare, and tend to promote or protect them. The legislature cannot, under the guise of a police regulation, provide for the revocation of a physician's license for a mere breach of ethics not involving moral turpitude or dishonorable conduct. Such advertisements as those published by the appellant may be considered unethical by some or even by many physicians and may constitute ground for exclusion from a medical society. But since the appellant's advertisements, in the opinion of Butler, J., were entirely harmless and could not injuriously affect the public health, safety, morals or welfare, they no more justified the revocation of a physician's license than would a mere breach of etiquette or the exhibition of table manners that do not conform to the usage of polite society. If the statute attempted to make such advertising a ground for the revocation of a physician's license, it would be unconstitutional and void.

Workmen's Compensation Acts: Strain and Cerebral Hemorrhage.—In the course of his employment, Krenz tried to lift or turn a tank weighing about 400 pounds. After he completed his task, his face was seen to become distorted. He crawled out of the pit in which he had been working and was led to a place where he could sit down. He immediately collapsed and was carried unconscious to a physician's office and thence to his home. After eight or ten days he could sit up, but his left side was paralyzed and his memory was impaired. He filed claim with the industrial commission for compensation under the workmen's compensation act. All medical experts agreed that the claimant was disabled by an injury to the brain that occurred while he was working as described. Each of four medical experts called by the claimant testified that the injury was due to the rupture of a blood vessel in the brain, under the strain of lifting. One of these experts thought, and in this opinion the other three concurred, that the claimant had in the arteries of his brain a so-called miliary aneurysm, a little place where the vessel walls were weak, and that the aneurysm "blew out." Medical experts called by the employer thought that the lifting may not have caused the injury. One of them expressed the opinion that the disability was more likely due to thrombosis, cutting off the blood supply to part of the brain and thus causing paralysis. Although the rupture of a miliary aneurysm was possible, it was, in the opinion of this witness, improbable because of the rarity of that condition. The industrial commissioner awarded compensation, and the employer appealed to the Supreme Court of Minnesota. Considering the evidence, said the Supreme Court, there is no merit to the attack on the award of the industrial commission. There was almost instantaneous connection between the exertion in the course of employment and the workman's collapse, and even a layman might rightly conclude, without the aid of medical opinion, that the exertion ruptured a blood vessel in the brain. The award was accordingly affirmed.—*Krenz v. Krenz Oil Co. (Minn.), 243 N. W. 108.*

Malpractice: Evidence of General Reputation for Skill and Care.—The declaration charged the defendants, a surgeon who performed a tonsillectomy, his anesthetist, who administered an anesthetic, and the hospital in which the operation was performed, with unskilfulness and negligence. The anesthetist died before the trial and the action was dismissed as to him. Witnesses on behalf of the surviving defendants, however, were permitted, over the plaintiff's objection, to testify as to the skill and experience of the dead defendant as a surgeon and anesthetist. The plaintiff, after a judgment against him, contended on appeal that the admission of this testimony was prejudicial error, pointing out that the dead anesthetist's reputation for skill and carefulness was not in issue. Although the language of the declaration, said the Supreme Court of Appeals of West Virginia, charged no specific act of negligence, the negligence with which the defendants were charged arose "by and through their want of skill and care." The language used did not limit the "want of skill and care" to any particular act. It was a direct charge against the defendants' proficiency generally, and where the allegation in the pleadings of "want of skill and care" is general, and not confined to a specific act, a physician's reputation for skilfulness and care becomes a proper inquiry for such consideration as the jury deems requisite.—*Dudley v. Grace Hospital (W. Va.), 164 S. E. 670.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Cincinnati, April 13-15. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Orthopsychiatric Association, New York, February 23-25. Dr. George S. Stevenson, 450 Seventh Avenue, New York, Secretary.

American Physiological Society, Cincinnati, April 10-12. Dr. Frank C. Mann, Mayo Institute, Rochester, Minn., Secretary.

American Society for Experimental Pathology, Cincinnati, April 10-12. Dr. C. Phillip Miller, Jr., University of Chicago Department of Medicine, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Cincinnati, April 10. Dr. V. E. Henderson, Medical Building, University of Toronto, Toronto, Canada, Secretary.

American Society of Biological Chemistry, Cincinnati, April 10-12. Dr. Howard B. Lewis, University of Michigan Medical School, Ann Arbor, Mich., Secretary.

Federation of American Societies for Experimental Biology, Cincinnati, April 10-12. Dr. C. Phillip Miller, Jr., University of Chicago Department of Medicine, Chicago, Secretary.

New York, Medical Society of the State of, New York, April 3-5. Dr. Daniel S. Dougherty, 2 East 103d Street, New York, Secretary.

Pacific Coast Surgical Association, Del Monte, Calif., February 23-25, Dr. Edgar L. Gilcreest, 384 Post Street, San Francisco, Secretary.

Southeastern Surgical Congress, Atlanta, Ga., March 6-8. Dr. B. T. Beasley, 45 Edgewood Avenue, Atlanta, Secretary.

Tennessee State Medical Association, Nashville, April 11-13. Dr. H. H. Shoulders, 706 Church Street, Nashville, Secretary.

SOUTHERN SURGICAL ASSOCIATION

Forty-Fifth Annual Session, held at Miami, Fla., Dec. 13-15, 1932

(Concluded from page 454)

Wounds of the Heart

DR. ALBERT O. SINGLETON, Galveston, Texas: The important causes of death from heart wounds which should be remembered are "herz tamponade," hemorrhage, foreign bodies, and secondary infection. Aspiration of the pericardium may relieve the patient from "herz tamponade" temporarily until the operation can be performed; occasionally, aspiration alone may save life. Foreign bodies may do little harm and should not be removed in most instances. Extreme care should be used to eliminate infection, which often follows in the pleural cavity and takes many lives after apparent successful suture.

Treatment of Fractures of Shaft of Femur

DR. G. A. HENDON, Louisville, Ky.: My plan does not entirely depend on the cardinal principles involved in the treatment of fractures, such as splinting, suspension and skeletal traction, but contemplates the use of a device made of beef bone which I have dignified by the name of key. I call it a key because there are certain locking principles involved in its use that make it more than a pin or a peg, but under no circumstances should it be considered a graft, as its growth is neither expected nor desired. The factors that endow it with distinctive qualities and exclusive achievement are its relative shape and its obvious purpose together with the detail of its employment. First, it is square, thus presenting four surfaces and four sharp angles that cut into the circumference at four separate points, which affords a locking principle and reduces the risk of splitting to a minimum. Experience has taught that a key should square the diameter of the circular opening in which it is intended to engage. For example, if the diameter of the circle is three-eighths inch it should engage a key three-eighths inch square. A key of such dimension will cut the circumference of the circle one-sixteenth inch at each of its four angles. This phase insures against rotation and contributes security to the position of the key. Secondly, the key is made to taper, thereby acquiring the properties of a wedge. I have never seen published any report that embodied the same principles or the same technic or the same results that I have obtained. The method is to be recommended because it shortens the period of confinement and disability at least 50 per cent. It relieves the patients of the heavy burdens with which they are encumbered when the external methods of immobilization are relied on. Their position while in bed can be altered at will and proper hygiene is much more easily accomplished. The local circulation and nutrition in the leg is so little interfered with that on recovery the patient can almost at once resume the muscular control of his injured limb. There need be no fear of shortening by overlapping. The danger of infection can be dismissed as a serious obstacle because the commonly accepted standards of modern asepsis render infection remote, and should it occur the process of bony union is not gravely interfered with. The non-touch technic is not considered essential and was not used in our work. My cases total thirty-three in which there was no mortality attributable to the operation. Complete union was finally obtained in four cases of suppuration, all of which are explained. One compound fracture had existed three months before operation; prompt union occurred and a useful leg was obtained. Three gunshot fractures united promptly. In two cases, operation had been previously performed. In fifteen cases of nonunion, other methods had failed. The period of nonunion ranged from four weeks to three years and ten months. There were three cases of accidental complications, one due to faulty technic, one to an uncontrollable patient and one to the traumatic hazard of football. A case of only four weeks' duration was classed as nonunion because at the end of that time there was overlapping and suppurative necrosis of the fragments and no evidence of callus formation.

Surgical Fusion of Tuberculous Hips in Children

DR. O. L. MILLER, Charlotte, N. C.: This paper is based on experience with forty-five patients: twenty-seven boys and eighteen girls. The average age of the patients was 7 years; the youngest patient was 3 years of age. In six cases, refusion was required, owing to absorption of the graft. One death occurred the day of operation, presumably from pulmonary embolus. Meningitis was not a complication in any case. Opening a tuberculous hip seems to attenuate the lesion, much like opening the abdomen in tuberculous peritonitis. The blood supply about the hip is increased and local resistance evidently stimulated. Two hips found to be tuberculous at biopsy fused spontaneously when operation had to be postponed because of other complications. This is an observation and not proposed as a method of treatment. I have seen no cases of unopened hip joints, apparently definitely tuberculous, fuse spontaneously. Quite a number have been observed for a long period with this in mind. One child in this series, believed for a time to have a healed hip with motion, eventually returned with active hip joint disease and now, following operation, has a well fused hip without pain or apparent active disease. Operation has been carried out in various stages of advancement of the disease and destruction in the hip joint. When there is great destruction of the joint elements and extensive bone and soft tissue infiltration, the hazard of obtaining a strong bone graft is increased. Aside from one surgical death in a Negro boy, there have been no apparent untoward results so far from the operation as practiced. Children have been dismissed from the hospital earlier and with more certainty of their future well being. They have been observed over quite a period of time, have appeared to be clinically well, and have thrived without interruption or the necessity of constant readmission to the hospital. Experience leads me to feel that surgical fusion of the hip has proved a valuable adjunct to the clinical and economic management of tuberculosis.

Effect of Roentgen Rays on Bone Regeneration

DRS. BARNEY BROOKS and HARRY T. HILLSTROM, Nashville, Tenn.: Young rabbits were used in most of the experiments. In a few experiments dogs, guinea-pigs, rats and mice were used. No important difference was observed in the results obtained. In each group of experiments, one or more litters of young rabbits were used. As far as possible, each litter was cared for in such a manner that each rabbit of a litter was subjected to the same environment except for the age at exposure and the amount of irradiation. The factors constituting the standard dose, subsequently referred to as 100 per cent skin erythema dose, were as follows: 180,000 to 200,000 volts, 20 to 30 milliamperes, 60 cm. target-skin distance, 0.5 mm. copper combined with 1.0 mm. aluminum filters, and forty-five minutes' exposure. The exposed fields varied from 1 by 2 cm. to 1 by 5 cm. Either the right tibia or the right ulna and radius was exposed. The remainder of the animal's body was carefully protected with sheet lead. After exposure, the animals were cared for on a suburban farm. At regular intervals varying from one to twenty-eight days, roentgenograms were made of both the exposed and the nonexposed extremities. In each instance the extremity was placed as near the film as

possible and the x-ray tube at a distance of 7 feet from the film. Measurements in growth in length of the bones were made from the roentgenograms. In experiments designed for histologic study, the exposed and nonexposed bones were removed, fixed in solution of formaldehyde, decalcified, sectioned, and stained with hematoxylin and eosin. A comparison of growth curves in both normal and irradiated bones in all experiments shows conclusively that the inhibitory effect of the roentgen ray on bone growth is a change in rate of growth and not a change in duration of growth. No instance of complete cessation of growth in the irradiated bone before complete cessation of growth in the corresponding normal bone has been observed. The effect of a certain amount of irradiadiation on the growth in length during any period is about the same regardless of the time before this period at which the exposure occurred. Not only is this important from its clinical application, but it may have important significance in the consideration of the possible mechanism by which irradiation inhibits growth of bones. If the capacity for growth of a bone lies within the bone, it must be assumed to be determined by some component of the bone which, for purposes of discussion, may further be assumed to be the cells of the epiphyseal cartilage. Present knowledge of the vital characteristics of a cell is not sufficient for a discussion of the possibilities of producing in the cell changes that would be constantly reproduced in successive cell generations. Furthermore, it would seem as if a difference in the vulnerability of cells were evident from the histologic appearances of tissues that have been exposed to the roentgen ray. Some of the cells at least show no evidences of abnormality, and others are obviously disintegrated. Instead, therefore, of assuming that cells in the act of division are more susceptible to the destructive influence of the roentgen ray, we are assuming that cells with a capacity for rapid division are more susceptible than those with a capacity for slower division.

Recurrent Ectopic Pregnancy

DR. ALFRED R. JONES, Roanoke, Va.: Three cases of repeated tubal pregnancy are reported. The percentage of normal pregnancies following a tubal pregnancy is much greater than the percentage of repeated tubal pregnancies. The opinion is expressed that, in the absence of gross disease of the uninvolved tube, it should not be removed.

Chorio-Epithelioma

DR. WILLIAM T. BLACK, Memphis, Tenn.: A uterine hemorrhage, or a blood-tinged discharge following pregnancy (especially a hydatidiform mole), with a positive Aschheim-Zondek test, should arouse suspicion of a chorio-epithelioma. While 45.7 per cent of chorio-epitheliomas follow moles, only about 1 per cent of moles are followed by chorio-epithelioma; therefore, a hysterectomy or radium in large doses is not justifiable in young women with moles. The diagnosis of typical cases of chorio-carcinoma from the histologic evidence and clinical symptoms should not be difficult. A panhysterectomy should be performed when a diagnosis is made, which should be followed by irradiation. As embryonic cells are very sensitive to radium rays, radium is a good prophylactic and curative agent in chorio-epithelioma in selected cases. Repeated Aschheim-Zondek tests following moles and especially following hysterectomy for chorio-epithelioma are of paramount prognostic importance. Patients with mole pregnancies should be watched for several months. However, if an Aschheim-Zondek test is negative, one may feel reasonably assured of no further trouble.

Hysterectomy

DR. F. WEBB GRIFFITH, Asheville, N. C.: In order to determine the results of hysterectomy in the hands of an average surgeon in an average hospital, I have reviewed 700 consecutive abdominal hysterectomies, exclusive of those done for carcinoma of the cervix. As I performed all these operations, they have a more or less uniformity for comparison. I shall not discuss vaginal hysterectomy. I hope and believe that the present indications for hysterectomy will be met to a great extent by some other yet unknown but less radical measures. Radium is the treatment *par excellence* for carcinoma of the cervix, while surgery is just as strongly indicated in carcinoma of the body of the uterus. The mortality following hysterectomy in the different clinics varies from less than 1 per cent up to practically 9 per cent. The mortality in this series of 700 hysterectomies was 2.15 per cent. Certainly, therefore, double that mortality, or 4.37 per cent, should be the upper limit in any reputable hospital. The greatest conservatism should be practiced in dealing with the ovaries in the noninflammatory groups, but in the cases of pelvic inflammatory disease one is justified in being more radical. The healthy outdoor life of the woman in the country is an important factor, tending to lessen the severity of the artificial menopause.

Presidential Address: Surgery and Its Relation to Society

DR. R. S. CATHCART, Charleston, S. C.: Surgery is affected by the constantly changing social order. With every change there are always some professional men alarmed at the possible dangers confronting the fundamentals of the practice of medicine. The attitude of society toward the surgeon and the attitude of the surgeon toward society is crystallizing in a new form, and many members of the profession are seriously thoughtful over certain phases of the situation. While the course of medicine has suffered setbacks in the past and may suffer them again, the fact remains that advancement has been made and the belief is that it will continue to be made. We may be assured that ultimately the greatest good to the greatest number will result, even though it is not outside the realm of possibility for a period of chaos to intervene. The manner in which the social relations of medicine evolve is largely within the guidance of the profession. Should it pursue with arrogance a course that ignores the public interest and demands the preservation of present conditions, without doubt the control of medical matters will be taken from the profession. On the other hand, if it pursues with humility a course that will develop the best interests of humanity, it is certain that the fundamentals of scientific and ethical medicine will be preserved and the profession will be allowed to govern its growth. The main danger seems to come from ignoring public interest in medical matters, and from a desire by the public for change in the practice of medicine. Just how strong these sentiments may be is not clear, but the rumblings are heard. The socialization of medicine or of state medicine are phrases that are interpreted according to individual interests. To condemn and attack all forms of socialized medicine is poor policy. It is flinging a challenge to the trend of the times and that challenge will certainly be accepted. Already a measure of state medicine exists. It is our duty to direct it in the right channels. Any form of state medicine, including hospitals, should be entirely out of politics. It will be difficult to secure the best surgical service for people at large if such service is selected by political preferment rather than professional competence. Appointments of this kind will be obliged to have a deleterious effect on surgery. It will be difficult to maintain standards if the present trend of state medicine is followed. Scientific research is necessary for the progress of medicine, and the incentive for such work is generally lacking in medicine under governmental control. The younger men should encourage the development of this field.

Acute Suppurative Cholangeitis

DR. FRANK BOLAND, Atlanta, Ga.: A Negro, aged 35, entered the Grady Hospital, March 27, 1932, complaining of pain in the abdomen, sweats and chilly sensations. His pulse was 104, respiration 22, and temperature 103.6 F. Three days before admission, while "heading" a bale of cotton, he felt a sudden pain in the region of the umbilicus. His suffering for half an hour was intense, but the pain was felt only intermittently when he entered the hospital. During the preceding five weeks the patient had experienced several attacks similar to this one, but less severe. No history of previous illness could be obtained, except that for several months he had noticed a hard lump on the right side of the rectum, which proved to be an unhealed fistulous tract, with considerable discharge. He was apparently very sick. The eyes were deeply jaundiced. The abdomen was distended, rigid in the upper half, and slightly tender. The liver was moderately increased in size. April 11, a roentgenogram of the abdomen with a barium sulphate enema showed only a dilated colon. Typhoid, malaria and other fevers were ruled out by the laboratory, and there was no response to quinine therapy. Amebas could not be demonstrated. One

blood culture was positive for staphylococci. The icterus index was 37.5. The blood Wassermann reaction was negative. The patient's blood counts were normal for the first two weeks he was in the hospital, after which the leukocytes rose to 11,000, with polymorphonuclears 84 per cent. The temperature ran a septic course, varying from 98 to 103.6 F., and the pulse from 70 to 130. Operation, April 15, under gas anesthesia, showed a jaundiced peritoneum. There was no free fluid, and tubercles were not present. The liver was of normal color and was indurated in the right lobe, as usually seen in abscess. This indurated area was aspirated in six or eight places with a needle of large caliber, but no pus was obtained. The head of the pancreas was swollen and hard. Several enlarged glands were felt in the portal fissure. The distended gallbladder contained normal looking bile and no stones. The mucous membrane seemed healthy, but a culture taken at this time later grew short-chain streptococci. Cholecystostomy was done. The common duct appeared to be normal. There was no evidence of disease in the spleen or appendix. The anal fistula was opened and packed. Five days later it became necessary to perform suprapubic cystotomy for urinary retention probably due to urethral stricture. The patient died nine days after the abdominal operation. Autopsy showed a liver weighing 1,900 Gm. All the biliary ducts were enlarged, and dissection found them filled with greenish, purulent exudate throughout, even into the smallest terminal branches. The gallbladder showed no inflammation nor leakage from around the cholecystostomy tube. There was an abscess in the head of the pancreas, and the pancreatic ducts were filled with pus. Smears demonstrated no amebas but numerous streptococci and staphylococci. A few small stones were discovered in some of the branches of the hepatic duct. The anatomic postmortem diagnosis was suppurative cholangeitis and pancreatitis.

Chronic Abscess of Liver

DR. K. H. AYNESWORTH, Waco, Texas: There are reported three cases of chronic liver abscess ranging from five to twelve years in duration. None of the patients were known to have suffered from any diarrheal ailments. One patient, after several weeks of drainage, had Ameba histolytica in the discharge from the wound. The others had only the common organisms of infection. Every patient had suffered from chronic ill health with periods of apparent freedom from disease, but at no time was any one in normal health. One patient died from blood stream infection after the abscess of the liver had healed; one patient had a secondary subdiaphragmatic abscess, which healed after drainage. All patients had a simple drainage operation.

Abscess of the Liver

DR. HERBERT B. GESSNER, New Orleans: This paper reviews about 100 cases of abscess of the liver recorded in the New Orleans Charity Hospital between the years 1916 and 1932. Ninety-six cases were verified; fifty-eight of the patients were discharged and thirty-eight died, a mortality of 39.58 per cent. A comparison on the basis of parasites found was made. Counting as amebic the cases in which smear and culture were negative with those in which the pus or the feces showed amebas, a total of fifty-six cases was arrived at with nineteen deaths, a mortality rate of 33.9 per cent. The cases showing staphylococcus, streptococcus or Bacillus coli infection gave a mortality rate of 37.9 per cent. Cases noted as presenting large abscesses showed twenty-six recoveries and fourteen deaths, a mortality of 35 per cent, a little below the general rate of 39.58 per cent. Some little comfort was derived from the comparative mortality in white persons and Negroes, the former showing a 30.1 per cent rate, the latter 51.1 per cent, probably as a result of greater delay in seeking treatment. In the series of ninety-six cases, 55.2 of the patients were white and 44.8 per cent Negroes. Examining other phases of the records, it was found that two cases gave a history of trauma; thirty-three out of ninety-six gave a history of diarrhea of importance, recent or old. Six showed jaundice on admission. In forty-seven cases (72 per cent) the roentgen examination showed a high right leaf of the diaphragm, while in eighteen (28 per cent) this diagnostic aid was absent. In sixty cases (80 per cent) there was a definite leukocytosis, in fifteen (20 per cent) no leukocytosis. One patient reported ten years spent in the tropics; two were steamship firemen, one of whom reported a stay in the tropics, while another very likely had been similarly exposed. Aside from these cases, occupation and residence had no perceptible influence. Three were recurrent cases, a previous operation having shown abscess of the liver. The relative proportion of male and female patients was 92.8 per cent males, 7.2 per cent females. Three patients had involvement of the right pleural cavity, one with bronchohepatic fistula; a fifth came in with hemoptysis. Of these five, four died, a mortality rate of 80 per cent. The thirty-eight fatal cases yielded twelve autopsies. In five cases multiple abscesses were found; in two cases free blood was found in the abdomen (200 and 1,500 cc., respectively); in three there was pneumonia and in two there was nothing noteworthy besides the single abscess. In one of the three pneumonia cases there was perforation into the colon. No case presented cerebral or splenic abscess.

Surgical Treatment of Trigeminal Neuralgia

DR. ADRIAN S. TAYLOR, Birmingham, Ala.: The radical operation has been so systematized that it has become relatively simple. I have done the subtotal section of the sensory root in Birmingham thirty-seven times without a death, and with permanent cure in all cases. One patient had a return of pain and it was necessary to cut additional fibers eighteen months later. The reexposure was easy, no trouble was experienced from hemorrhage, the uncut fibers were easily identified, and permanent relief followed their section. In two patients there was a temporary weakness of the external rectus. In one there was a complete facial palsy beginning the seventh day after operation and gradually becoming complete. The explanation of this paralysis of the seventh nerve lies in the possibility of trauma transmitted from the gasserian ganglion through the great superficial petrosal nerve to the ganglion of the knee of the seventh. At this point this nerve lies in a bony canal, and slight trauma might cause sufficient edema of the nerve to cause its interruption in its bony canal. In this particular case, power in the orbicularis was lost, and a colleague, Dr. Frank Clements, kindly did a partial tarsorrhaphy to protect the exposed cornea. In this procedure, temporary synechiae were formed between the edges of the upper and lower lids. Full power returned within a year, the lids were separated, and the patient has remained well without any injury to the eye. Trichlorethylene is now being used as treatment by inhalation. It has a selective action on the sensory part of this nerve. From twenty to thirty drops three times a day are inhaled from a handkerchief by the patient while reclining. Relief may be afforded in a few days. If it is not experienced in four or five weeks, the treatment is discontinued. Palliative neurectomies or alcohol injections affording temporary relief may be wise. Radical operation is safer than alcoholic injection of the ganglion.

Primary Tuberculosis of Spleen

DR. H. R. SHANDS, Jackson, Miss.: In the past two years I have operated in three cases of primary tuberculosis of the spleen in which a correct preoperative diagnosis was made. I believe it fairly certain that by means of a roentgenogram of the splenic area a correct diagnosis may be made in the vast majority of cases of chronic primary tuberculosis of the spleen.

Hemolytic Jaundice: Five Splenectomies in One Family

DR. WALTER D. WISE, Baltimore: Six cases of chronic congenital hemolytic jaundice with splenectomy are reported. Five cases were definitely familial, and in one family. Four patients were quite ill; one case was complicated by nephritis and severe gout, one by pyelitis and one by marked optic atrophy. One of the two adults had gallstones; two had accessory spleens. After operation one had pneumonia and lung abscess, two had mild postoperative wound infections, one having numerous skin infections about the face, another about the fingers. All patients were promptly relieved of jaundice; all except one had prompt improvement of anemia and his ultimate improvement was satisfactory; in none of the reexamined patients did the fragility of the red cells become normal. There was no operative or hospital mortality. One patient with nephritis and gout died some months later of cerebral hemorrhage and uremia. Five patients are living and in good health five years, two years and ten months, two and a half years, two years and two months and nine months after operation. Bone changes have been slight. The optic nerve involvement in one case is the only one so far reported.

Selective Collapse in Treatment of Tuberculosis

DR. FRANK S. JOHNS, Richmond, Va.: A review of 100 cases in which operation was performed for pulmonary tuberculosis, in all of which some form of thoracoplasty was done, shows interesting results in the most recent group, in each of which only a limited selective collapse operation was done. I have followed this small series of cases closely. The results have been better with these than with other patients who had the complete or standard thoracoplasty. The selective operation has proved definitely less hazardous. The majority of these cases were completed in one stage and the number of days in the surgical division were correspondingly reduced. The thirty-three patients of this series have had only the upper five to seven ribs resected, the length of the section removed depending on the size of the cavity. In every apical case, large sections of the first rib should be resected; for in these selective cases the first rib is literally the key to the situation. It has been well described as "the keystone of the thoracic dome." For a few of the cases, the first and second ribs have been removed entirely. The size of the cavity and its location are the governing factors in my choice of procedure. A patient who has an apical cavity with a sound lower lobe should have the cavity in the apex obliterated; but the good lower lobe should not be handicapped by the compression resulting from a complete thoracoplasty. I firmly believe that the cavity should be closed, even if it requires multiple stages of operation. In several cases I have found it necessary to do an anterior resection of the ribs in addition to the posterior operation. The collapse of the cavity is essential to the cure of the patient. Great benefit is derived by selective groups of patients with pulmonary tuberculosis from the operations on the phrenic nerve. When surgery of the phrenic nerve was indicated, alcohol injections, crushing of the nerve and phrenicectomy have given surprisingly good results. In a small percentage of cases these results were so satisfactory that no further selective collapse operation was indicated. I now advocate and practice the importance of allowing this less extensive and safe operation on the phrenic nerve to prove its utmost usefulness before I proceed with a thoracoplasty. I have abandoned my former plan of doing this operation as merely a preliminary or index to a more radical procedure. It has earned a place of its own and should be accorded plenty of time after the operation to effect its maximum results. I urge a more intensive surgical treatment of patients with pulmonary tuberculosis. Pneumothorax is the recognized primary collapse treatment of choice. Selective extrapleural thoracoplasty ranks second in my hands. Phrenicectomy is third, with its varied procedure and application.

Arachnidism

DR. LLOYD NOLAND, Birmingham, Ala.: Latrodectus mactans is perhaps the only really poisonous spider in the United States. This spider is shiny, coal black and usually brilliantly marked in red or yellow or both, the most constant being an hour-glass-shaped bright red marking on the ventral surface of the abdomen. The female, the one responsible for the bites, may attain a half inch in length, with a leg spread of as much as two inches. The "black widow," so called because of its custom of eating its mate, is usually found alone. It builds a coarse web in dark or dimly lighted places, the seats of outdoor toilets seeming to be frequently favored, but instances are increasing of its invasion of habitations, garages, automobiles, and even of beds in which persons are sleeping. This spider is seemingly fearless, instantly attacking anything coming near it. In the eight year period 1924-1932, twenty-nine patients with arachnidism have been admitted to the Employees' Hospital at Fairfield, Ala. In twenty of these patients the bite was received on the genitals, in nine on other parts of the body, such as the leg, finger, hand and knee. In seventeen cases the bite was received in an outdoor privy; other bites were received variously, such as in a garage, in an automobile, two in bed, two in the field, and two in houses. In every case the symptoms have presented a most dramatic picture, of which the following is an instance: J. T., a Negro, aged 43, was admitted with a diagnosis of acute intra-abdominal lesion, probably perforating ulcer. The history was as follows: About 3 a. m. the patient, as a result of a large dose of epsom salt, found it necessary to go to an outdoor toilet, where he thought that something bit him on the scrotum. About five or ten minutes later he began to have very severe pain in the right thigh. The pain progressed, to involve the lumbosacral region, the hips, the entire abdomen and the right chest. The patient was admitted to the hospital about three hours following the beginning of the attack. He had been given a hypodermic of one-sixth grain (11 mg.) of morphine about one hour before admission. The picture was one of intense agony, the patient complaining of terrific pain in the abdomen and back, the hips and both thighs. The abdomen presented an intense boardlike rigidity. The temperature was 98 F., the pulse 90. The urine showed a trace of albumin. The leukocyte count was 8,000; the blood pressure 140 systolic, 90 diastolic. The pain was so intense that the statements of the patient were decidedly incoherent. A bite could not be discovered. About two hours after admission the temperature rose to 100 F., descending to normal in about six hours and remaining normal for the following twenty-four hours. On the third day the temperature again rose to 100 F. but subsided within a few hours. The patient was given four doses of one-sixth grain of morphine over a period of about six hours before any relief was obtained. His complaint of intense agony was continuous, and it was difficult to keep him in bed. The abdominal pain was markedly paroxysmal. There was no vomiting at any time. The patient gradually improved and at the end of seventy-two hours had entirely recovered, except for some muscular soreness. I believe that a picture such as the one presented, closely similating the intense, agonizing pain frequently encountered in perforated gastric or duodenal ulcers, can easily lead to serious mistakes in diagnosis and to the performance of abdominal exploration. Differentiation should be comparatively easy in most instances if one is informed and familiar with spider poisoning and considers the intense cramplike pains practically always encountered in the extremities and the back, as well as a history of possible spider bite, and not infrequently is able to locate a small punctate indurated area at a point at which the bite was received. None of the patients in this series have been operated on and all have recovered in periods varying from twenty-four to seventy-two hours. The leukocyte count has varied from a high of 26,000 to a low of 6,000, with an average of 11,000.

Acute Extradural Abscess with Compression of Cord

DR. GEORGE H. BUNCE, Columbus, Ga.: Acute extradural abscess is not as rare as has been supposed. Accumulating experience proves that it is a recognizable clinical entity. The only effective treatment is laminectomy with dependent drainage of the abscess. Cases without complication, if operation is performed early, show less mortality than has hitherto been reported.

The Endocrinc Influence in Prostatic Hypertrophy

DR. WILLIAM E. LOWER, Cleveland: Having demonstrated experimentally and clinically the effect of putting the interstitial cells of the testicles out of commission, I have tried methods other than castration for accomplishing the same results. I have shown experimentally that the results of castration can be obtained by ischemia; that is, by depriving the testicle of its main blood supply. I decided to try this clinically. The main artery to the testicle is the internal spermatic, a branch of the aorta, which is given off just below the renal vessels. The other arteries supplying the testicle are the external spermatic, a branch of the inferior epigastric, and the deferential, which follows the vas closely. In a limited number of clinical cases I have tried this procedure and a marked diminution in the size of the prostate has been noticed. The series, however, is too small to permit any conclusions to be drawn. I believe that in the rather large, soft glands a very definite reduction in the size of the gland may be expected from reducing the blood supply to the testes and thereby controlling the endocrine influence. In doing herniorrhaphies for direct inguinal hernias, I have repeatedly divided this entire cord and atrophy of the testicle on that side followed in course of time, but in no instance was there sloughing. I decided to try this procedure clinically in cases of prostatic enlargement. In a limited number of cases, I have divided the entire cord. In two instances sloughing followed, and I had to remove one testicle in one case and both in another. Since then I have divided only the interal spermatic and deferential arteries with the vas. No sloughing has followed.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

44: 921-1152 (Nov.) 1932

*Leukocytic Response to Measles. B. Benjamin and Sylvia M. Ward, New York.—p. 921.
Acute Intestinal Intoxication Associated with Mastoiditis in Infants. M. Morris and W. B. Smith, San Francisco.—p. 964.
Suppurative Pleuritis in Children: Its Pathogenesis, Diagnosis and Treatment. H. Neuhof and S. Hirshfeld, New York.—p. 973.
*Sore Throat in Children Due to Streptococcus Epidemicus. I. Pilot and P. Rosenblum, Chicago.—p. 994.
*Antitoxin Content of Blood Serum of Children with Negative Reactions to Schick Test. C. R. Messeloff and M. J. Karsh, New York.—p. 999.
Treatment of Extrapulmonary Tuberculosis with Methylated Antigen. Gladys L. Boyd and H. C. Parsons, Toronto, Canada.—p. 1007.
*Histamine Test of Gastric Secretion, with Particular Reference to Its Practicability in Childhood: Preliminary Communication. W. J. Siemsen, Chicago.—p. 1013.
*Ocular Torticollis in Children. I. M. Levin, Chicago.—p. 1026.

Leukocytic Response to Measles.—Benjamin and Ward present the results of a study of the leukocytic reactions in forty-six patients with measles, including observations on twenty patients during the incubation period. They employed the supravital technic in making the counts, and in their analysis they used a table of normal values for each of the white cell elements during the different ages of childhood. During the incubation period of measles, variations in the numbers of leukocytes were relatively slight. On the first day of the prodromal stage the leukocytic picture underwent a striking alteration manifested principally by a fall in the number of lymphocytes. At the height of the disease, all of the cell elements contribute to the production of leukopenia. Histologic changes observed in lymph nodes obtained from one of the patients indicated that the development of the lymphopenia in measles is coincident with marked hyperplasia of the lymphoid tissues. Nevertheless, the young lymphocytes in the glands did not appear in great numbers in the blood stream until the beginning of convalescence. The authors direct attention to the possibility that the blood picture may be suggestive of measles at a time when fever is the only apparent clinical abnormality.

Sore Throat Due to Streptococcus Epidemicus.—Pilot and Rosenblum made a bacteriologic study of the infections of the throat in children during the winter and spring of 1931, from January to May. They found that 9 of 102 children with sore throat yielded Streptococcus epidemicus; 50 others yielded ordinary hemolytic streptococci. The sore throat due to S. epidemicus was sporadic and not related to the supply of milk. The clinical picture of the patients with tonsillitis due to S. epidemicus was similar at the onset to that of the patients with ordinary hemolytic streptococcus infections, but complications and sequelae were more common in the former. The greater frequency of complications may be due to the capsules and the mucoid character of S. epidemicus, properties that have been associated with added virulence and aggressiveness.

Antitoxin Content of Blood.—Messeloff and Karsh titrated the blood of fifty-one children with negative reactions to the Schick test for the antitoxic content. Forty-eight, or 94 per cent, had at least $\frac{1}{30}$ unit of antitoxin in each cubic centimeter of blood serum. In one case the value was between $\frac{1}{50}$ and $\frac{1}{100}$, and in two other cases, between $\frac{1}{30}$ and $\frac{1}{50}$ unit per cubic centimeter of serum. In no instance did they find a child with a negative reaction to the Schick test with no antitoxin in the blood. They believe that reported discrepancies, such as finding persons with negative reactions to the Schick test with little or no antitoxin in the blood, can in all probability be ascribed to the use of a toxin of questionable potency. A standardized, potent toxin is essential for obtaining consistently correct results. Occasionally, a reaction to the Schick test will be positive within from twenty-four to forty-eight hours but will become negative thereafter. This type of reaction is found in persons having less than the usual $\frac{1}{30}$ unit of antitoxin per cubic centimeter of serum. From the point of view of immunity to diphtheria, such persons are of no practical importance, since they possess an efficient barrier against the development of clinical diphtheria. They conclude that the Schick test, correctly performed, is a practical and reliable indicator of the presence of diphtheria antitoxin in the blood in an amount sufficient to protect the individual against clinical diphtheria.

Histamine Test of Gastric Secretion.—Siemsen presents the results of extragastric reactions with varying doses of histamine in three subjects, and the results of fractional gastric analysis and the results of single aspiration tests in twenty children. From a study of the results the author concludes that the gastric response to histamine varies with the size of the dose. For comparative results, similar doses must be employed. The optimal dosage for children apparently lies between 0.005 and 0.01 mg. per kilogram. Fractional analysis by the histamine method is feasible and practicable in childhood. The single aspiration test is distinctly advantageous for practical clinical purposes.

Ocular Torticollis.—Levin reviews the literature and reports the histories of six patients with ocular torticollis to emphasize its importance in pediatric medicine. Recognition of the possible relationship of torticollis to ocular defects will spare children unnecessary operations, prolonged immobilization and other orthopedic measures. Correction of the ocular defect is at the same time the cure of the torticollis. When ocular torticollis is allowed to go uncorrected, the patient ultimately learns to ignore the image of the paralyzed eye and binocular single vision is lost, uniocular vision remaining, with amblyopia of the involved eye. Prolonged tilting of the head finally results in changes in the cervical musculature and spine, and asymmetry of the face and even of the skull. Treatment should be carried out by a competent ophthalmologist. The usual procedure is to produce a defect in motility in the sound eye which is similar to the defect in the paralyzed eye, so that equilibrium may be restored in the two eyes. This is effected by a backward insertion of the associate muscle of the sound eye (in paralysis of the superior oblique, operation on the inferior rectus of the nonparalyzed eye). This procedure results in the corresponding meridians of the retinas of the eyes becoming parallel again, with disappearance of vertical diplopia. Proper refraction is essential. Orthopedic measures and corrective exercises should be employed, when it is deemed necessary, following treatment of the eyes.

American Journal of Public Health, New York

22: 1123-1213 (Nov.) 1932

Health of the People in a Year of Depression. L. I. Dublin, New York.—p. 1123.
Relapsing Fever in California. G. S. Porter, M. Dorothy Beck and I. M. Stevens, San Francisco.—p. 1136.
*Oysters and Anemia. E. J. Coulson, H. Levine and R. E. Remington, Charleston, S. C.—p. 1141.
Child Hygiene. J. F. Rogers, Washington, D. C.—p. 1147.
*Ten-Year Study of Toxin-Antitoxin Mixture and Schick Test in Control of Institutional Diphtheria. C. C. Young and G. D. Cummings, Lansing, Mich.—p. 1151.
Infection of Cows with Brucella Abortus Variety of Brucella from Public Health Standpoint. Harriet Leslie Wilcox, New York.—p. 1157.
Accurate Method of Reading the Kahn Reaction. K. C. Read, Jr., Fort Smith, Ark.—p. 1177.

Oysters and Anemia.—In their report on oysters in anemia, Coulson and his associates show that the oyster is excelled only by liver in the amounts of iron and copper which it may furnish to the diet in an average serving. That these metals are easily available for hemoglobin production has been shown in previous work in which it was found that oysters, oyster ash (acid soluble) and a solution of iron, copper and manganese in the same quantities, fed to anemic rats, brought about hemoglobin regeneration at the same rate in all three cases. Oysters should therefore be efficacious in the treatment or prevention of those types of secondary anemia which respond to treatment with iron or iron and copper. There is increasing support for the view that dietary deficiencies can best be corrected by proper selection of foods rather than by the use of artificial concen-

trates or medicinal mixtures. In order to insure an adequate supply of the inorganic constituents for hemoglobin production it would seem a wise plan to include oysters in the diet of the pernicious anemia patient, in conjunction with liver extract, since it is known that liver extract is relatively low in iron. An average serving of oysters (110 Gm.) would furnish about 2 per cent of the human calory requirement (3,000 calories) and yield about 41 per cent of the daily dietary standard for iron, stated by Sherman to be about 15 mg.

Toxin-Antitoxin and Schick Test.—The results of a Schick survey of the resident population at the Michigan Home and Training School at Lapeer are presented by Young and Cummings for 1920 for periods ranging from 1895 to 1920. The survey included 1,006 members of the 1920 population resident for eleven years thereafter, and the population of the institution in 1928 and 1931. The 1920 population was 15.1 per cent positive and the 1,006 patients of the same population, resident during the eleven years thereafter, were 15 per cent positive in 1920, 1 per cent positive in 1921 after treatment with toxin-antitoxin mixture, and 15.3 per cent positive in 1931. True or subclinical diphtheria was present as an influence on immunity before 1920 and was absent thereafter. The Schick tests done on the 1,006 patients resident at the time of the 1920 survey and during eleven years thereafter indicate that the span of artificially produced immunity runs close to seven years and that both artificially produced negatives and natural negatives tend to become positive over a given period of time.

Annals of Medical History, New York

4: 509-602 (Nov.) 1932

Robert Koch (1843-1910). G. B. Webb, Colorado Springs, Colo.—p. 509.
Koch's Views on Stability of Species Among Bacteria. T. Smith, Princeton, N. J.—p. 524.
Reception of Koch's Discovery in United States. H. R. M. Landis, Philadelphia.—p. 531.
William Shippen, Junior. W. S. Middleton, Madison, Wis.—p. 538.
Some Incidents of Medical Interest in the Life of General Lafayette. J. Friedenwald and S. Morrison, Baltimore.—p. 550.
Caligula, or History's Debt to Syphilis. C. S. Butler, Brooklyn.—p. 560.
Psychiatry in Historical Retrospect. F. M. Harrison, Brookline, Mass.—p. 565.
The Life and Times of Dr. William Harvey. W. Herringham, Hampstead, England.—p. 575.

Archives of Internal Medicine, Chicago

50: 649-800 (Nov.) 1932

Specific Dynamic Action of Protein in Patients with Pituitary Disease. M. N. Fulton and H. Cushing, Boston.—p. 649.
*Effect of Digitalis on Coronary Flow. N. C. Gilbert and G. K. Fenn, Chicago.—p. 668.
Relation of Sugar to Cholesterol in Blood. H. O. Mosenthal, New York.—p. 684.
*Congestive Heart Failure: XVII. Mechanism of Dyspnea on Exertion. T. R. Harrison, W. G. Harrison, J. A. Calhoun and J. P. Marsh, Nashville, Tenn.—p. 690.
*Liver Function in Hyperthyroidism. S. S. Lichtman, New York.—p. 721.
*Branch Arborization and Complete Heart Block. S. R. Rosenthal, Chicago.—p. 730.
Stenosis of Superior Vena Cava Due to Mediastinal Tuberculosis. G. Milles, Chicago.—p. 759.
Combined Actions of Quinidine and Digitalis on Heart: Experimental Study. H. Gold, W. Modell and L. Price, New York.—p. 766.

Effect of Digitalis on Coronary Flow.—In a series of experiments on dogs, Gilbert and Fenn found that digitalis has an effect that decreases the coronary flow. This decrease was observed under conditions of pulse rate and blood pressure that would normally tend to increase the volume of coronary flow. There was a decrease in coronary flow in part of the cases in which the blood pressure and the pulse rate fell. They do not expect such a vasoconstrictor action to be present in all experimental cases or in all clinical cases. Such an action is not to the biologic advantage of the animal, and it is offset by some protective reflex mechanism. Green and others have stressed the ease with which vasodilator effects may be obtained by nerve stimulation and the difficulty with which vasoconstrictor effects on the coronary arteries are obtained. Angina pectoris includes a large group of cases in which it is probable that vasoconstriction of the coronary arteries occurs as a result of reflexes originating in various sources. Such a reflex vasoconstriction is not to the advantage of the patient and does not occur with a normally acting autonomic system but in persons whose autonomic systems show lowered thresholds and are overlabile. It is in such a group that one would expect a vasoconstrictor action from digitalis to occur on the coronary arteries most readily. In a large series of clinical cases, as in a large series of experimental animals, digitalis in comparable doses showed a wide divergence of action. The different physiologic effects did not always appear in the normal sequence or with the same percentage of the lethal dose; or the one or the other action may not appear at all. The physiologic effect is probably not a simple function but is conditioned by a great many anatomic and biochemical factors with which the authors are not as yet familiar. The coronary flow is also a function of many variable factors, and the effect of one isolated factor cannot be predicted. While a vasoconstrictor action cannot be predicted in any case, there is enough evidence of the presence of such an action to warrant a great deal of caution in the use of digitalis in coronary disease.

Congestive Heart Failure.—Harrison and his associates draw the following conclusions from their observations concerning the mechanism of the production, in persons with cardiac disease, of dyspnea on mild exertion: 1. A decrease in vital capacity is important in two respects: alone it lowers the respiratory reserve and thereby predisposes to dyspnea, and it increases the resting ventilation through vagal reflexes from the lungs and hence lowers the respiratory reserve still further. 2. Afferent impulses from the moving muscles are a factor in the production of dyspnea because they cause reflex increase of the ventilation during the exertion. 3. Reflex stimulation of respiration, because of increased pressure in the right side of the heart and in the cardiac ends of the great veins, is of especial importance: (1) In some cases, venous pressure is higher than normal at rest and this increases the resting ventilation; (2) venous pressure rises more than normally during exertion and hence the patient with cardiac disease has greater than normal ventilation during exertion, and (3) the venous pressure, in contrast to its behavior in normal subjects, remains elevated after exertion, and therefore the ventilation in patients with cardiac disease also remains elevated longer than normal after the cessation of exercise. 4. All these factors so operate as to increase the value of the quotient ventilation divided by vital capacity, which is a measure of subjective respiratory distress in persons with cardiac disease. 5. These data constitute additional evidence against the validity of the widely accepted but erroneous theory that the symptoms of cardiac failure are essentially and primarily due to a diminution in the minute output of the heart.

Liver Function in Hyperthyroidism.—Lichtman demonstrated a disturbance in the oxidation of cinchophen in sixteen of twenty cases of uncomplicated hyperthyroidism. Thirteen of the cases showed an increased excretion of oxycinchophen in the urine up to 150 mg. daily. Larger amounts, between 150 and 200 mg., or from 31 to 42 per cent of the standard test dose, were excreted in the remaining three cases. On the basis of his previous experience, he believes that this indicates moderate impairment of the capacity of the liver cell to oxidize this substance further. In no instance was severe impairment of the hepatic function noted. There was no apparent relationship between the degree of functional impairment of the liver and the basal metabolic rate, the known duration of the disease or the percentage of weight lost. The constancy of depletion of glycogen in the liver cells in animals that have been fed thyroid substance and probably in clinical thyrotoxicosis suggests that the disturbance in oxidation of cinchophen is related to the capacity of the cells to store and mobilize glycogen. The galactose tolerance test gave no indication of a disturbance of hepatic function. There was little evidence of appreciable disturbance of the excretory functions of the liver as determined by studies on the icterus index, bilirubinemia, urobilinuria and urobilinogenuria.

Branch Arborization and Heart Block.—Rosenthal reviews the literature and presents the various processes producing heart block in five patients. He states that arborization block alone cannot be considered as a distinct entity and when present is associated with an interruption of one or both of the main branches of the bundle. Coronary sclerosis with infarction of the interventricular septum or chronic myocarditis with marked scarring may produce arborization block. Acute inflammations will not produce an arborization block, because the destruction of the arborizations is probably not complete. Acute or subacute myocarditis may lead to heart block by invasion of the atrioventricular node, the bundle of His or its branches. The author found endocarditic lesions in two cases

of myocarditis reported by him, one being microscopic and the other focal and small. Because of the cases reported in the literature as myocarditis of unknown origin, in which few or no miscroscopic studies were made, he suggests that the endocarditic lesions may have been microscopic and overlooked. In a case of essential hypertension with heart block, the mechanism by which the degenerative changes took place in the bundle of His is explained by an increased tonicity of the small arteries and the arterioles and prestasis and stasis in the precapillaries and capillaries.

California and Western Medicine, San Francisco

37: 289-360 (Nov.) 1932

Pharmacology of Bismuth Compounds in Treatment of Syphilis: A Summary. P. J. Hanzlik, San Francisco.—p. 289.
Pulmonary Tuberculosis: Its Dietary Treatment: A Controlled Clinical Investigation. E. Bogen and W. Rachmel, Olive View.—p. 292.
*Rupture of Ureter: Medicolegal Problem: Report of Cases. M. B. Wesson, San Francisco.—p. 296.
*Gallbladder Surgery. A. Weeks and G. D. Delprat, San Francisco.—p. 303.
Malignancy: A Group Problem. J. D. Lawson, Woodland.—p. 307.

Rupture of Ureter.—Wesson found, in an experimental study of kidneys and ureters removed *en masse* with the bladder, obtained at necropsy, that the wall of a normal ureter cannot be punctured by a catheter, and it is doubtful whether a diseased ureter can be perforated unless a deep ulcer is present. The technic he used was first to fill the bladder with water, introduce the cystoscope and catheterize the ureters. The catheters used ranged in size from number 5 probe point to number 11 Blasucci. The injections were made with a 13.5 per cent solution of sodium iodide, and 10-inch gravity pressure overinjected in some cases. Syringe injections were used in an attempt to produce tears by pressure. In all cases, after the tip of the catheter had encountered resistance in the kidney or obstructions in the ureter, and force was used, the catheters buckled in the bladder. The bladders were then opened and the tissue adjacent to the ureteral orifices firmly clamped with artery forceps; the catheters were held close so that they could not bend outside of the ureter, and the author attempted to perforate the ureter or kidney, using all the force available in his fingers. By means of pins on a board, sharp links were made in the ureters and complete occlusion of the lumen was obtained by means of string, or by tying the ureter itself into a tight knot. Again, several catheters were passed into a ureter in order to encourage the presentation of a tip against the wall at an unusual angle. After the tip was caught, there was no further advance of the point no matter how great the amount of pressure used. Artificial strictures in the ureters and stiff catheters resulted in damaged tips or ureteral coils. On three occasions sharp tipped catheters were forced through the kidney parenchyma, but the capsule could not be pierced. Syringe pressure injection of sodium iodide solution, followed by air, brought about partial decapsulation, but there was no rupture. In one case a tight knot was tied in the ureter, the sides of the meatus were seized with clamps and a number 5 bougie was introduced with such force as to break the bougie tip, but the ureter held. A number 11 bougie was then tried. It was so large that it could not bend; two assistants with four artery clamps held the mouth of the ureter and sufficient pressure was used to tear the ureter away from the clamps, but eventually the clamps held and the knot was avulsed. Such force, of course, could not be applied to a living subject, as the bougie would buckle in the bladder. Stones by means of pressure necrosis produce leaks or openings through which the stones fall and the resultant perinephric abscess may drain into the ureter, the intestine or on the external surface.

Gallbladder Surgery.—Weeks and Delprat analyze 100 unselected cases of gallbladder disease in which they operated. They consider that operations on the gallbladder, whether simple drainage or complete extirpation, with proper consideration of preoperative care and of the time when the patient is operated on, are safe procedures, with low mortality, and that a high percentage of cured and thankful patients may be expected. They conclude that one must be sure that one's patient is in the best possible surgical condition by having recourse to the excellent laboratory facilities which are now available. The rose bengal test can now be used as a routine procedure to make certain that a reasonably normal liver function is present. This knowledge is of especial value in gallbladder surgery. The laboratory tests will reveal acute stages of bile tract inflammation, in which surgery is inadvisable. Sugar and fruit juices should be forced before any major operation. The simplest amount of surgery in the shortest space of time, consistent with proper work, should be done. When in doubt the gallbladder should be drained, because the less extensive the surgery the less the risk to the patient. A surprisingly large number of drained gallbladders never require further surgical procedures.

Medical Journal and Record, New York

136: 353-396 (Nov. 2) 1932

Tender Areas in Visceral Diseases. S. P. Sobel, New York.—p. 353.
Drinking Water. E. E. Cornwall, Brooklyn.—p. 357.
Appendectomy. J. W. Winston, Norfolk, Va.—p. 359.
Treatment of Rheumatic Affections. H. S. Davidson and C. Hyman, Atlantic City, N. J.—p. 360.
Vertebral Arthritis. W. J. Moore and D. Kyle, Glasgow, Scotland.—p. 364.

Military Surgeon, Washington, D. C.

71: 387-472 (Nov.) 1932

Inferiority Complex in Military Service. B. F. Duckwall.—p. 387.
Suicide: Social, Forensic and Psychologic Aspects. C. R. Bell.—p. 399.
The Main Factor Leading to High Hospital Cost. M. W. Hall.—p. 404.
Epidemic of Influenza on Shipboard and in Hawaiian Islands, in 1920. L. B. Bibb.—p. 413.
Medical Supervision of Equestrian Events in Tenth Olympiad. P. Goldberg.—p. 418.
The Medical Division, Army Air Corps. G. I. Jones.—p. 422.
Meeting of Permanent Committee of International Congress of Military Medicine and Pharmacy. W. S. Bainbridge.—p. 428.

Nebraska State Medical Journal, Lincoln

17: 465-504 (Nov.) 1932

*Peptic Ulcer Syndrome Without Ulcer. A. B. Rivers and Frances R. Vanzant, Rochester, Minn.—p. 465.
Restoration of Paralytic Deformities and Disabilities of Lower Extremities. J. P. Lord, Omaha.—p. 468.
Prognosis in Surgery of Abdomen: Acute Appendix. J. E. Summers, Omaha.—p. 473.
*Diseases of Thyroid Gland. B. B. Davis, Omaha.—p. 477.
Purpuras. A. S. Rubnitz, Omaha.—p. 482.
Hyperthyroidism and Neurasthenia. W. J. Arrasmith, Grand Island.—p. 486.
Osteomyelitis of Skull. C. G. Moore, Fremont.—p. 489.

Peptic Ulcer Syndrome Without Ulcer.—According to Rivers and Vanzant, there seems no doubt that the syndrome usually accepted as diagnostic of peptic ulcer can be produced by factors other than peptic ulcer. The ulcer-like syndrome usually occurs in the nervous, high-strung, intensive person and is particularly likely to be established during periods of fatigue and tension. Because peptic ulcer also is frequently seen in similar cases, because reactivation of the ulcer frequently takes place following a period of stress, fatigue and tension, and because fluctuating psychophysiologic factors seem capable of preventing the cessation of the ulcer syndrome, it is suggested that factors which have their inception in derangement of the nervous system must be significant in the cause and course of the ulcer type of syndrome, whether or not ulcer is present. It is well to remember nervous factors in considering the treatment of patients having ulcer-like syndromes. In certain instances, to relieve the syndrome permanently, it is only necessary to readjust the patient's activities and to advise more rest and relaxation. In cases of peptic ulcer, the remembrance of this factor and the direction of some therapeutic measures toward relief make the symptoms much easier to control and undoubtedly influence the course of the disease favorably.

Diseases of Thyroid.—Davis states that the best brief statement of the physiology of the thyroid he has encountered is that of Marine, which is as follows: "The major function of the thyroid is to provide the means through its iodine containing hormone, thyroxine, for maintaining a higher rate of metabolism or oxidation processes than would otherwise exist, and also through fluctuations of activity, it provides the means for varying the rate of metabolism to meet changing physiologic needs." Almost every pathologic change in the thyroid is produced by an urge for more thyroxine. This may be due to an actual or relative iodine deficiency. Hypertrophy and hyperplasia are not due to multiplication of follicles but to the bringing to maturity of a large number of small undeveloped follicles. Every active hyperplasia is marked by the disappearance of colloid within the follicles and a heaping up of new and larger epithelial cells within the follicle. Hyper-

thyroidism cannot exist without hypertrophy and hyperplasia. Most nodular goiters are the result of the formation of involutional bodies formed by the contraction of fibrous tissue and the catching of follicles within its meshes. There is no such thing as fetal adenoma. The changes in toxic nodular goiters and in toxic diffuse goiters are identical—hypertrophy and hyperplasia. If enough iodine is administered at the time of a special mental, emotional or physical stress that is sufficiently severe to develop goiter ordinarily, it will prevent the goiter. There is no medical cure for hyperthyroidism; it is wholly surgical. The lowest mortality is obtained when thyroidectomy is done early and before tolerance to iodine has been reached by its previous administration. The physician who attempts to treat toxic goiter without resort to surgery assumes a heavy responsibility. Through the administration of compound solution of iodine or other iodine preparations improvement occurs, but that it will be only temporary is 100 per cent certain. Never again can a patient be put in a condition in which operation can be done as safely as during the first treatment.

South Carolina Medical Assn. Journal, Greenville

28: 263-289 (Nov.) 1932

Surgical Judgment in Our Approach to Acute Abdomen. L. Guerry, Columbia.—p. 265.
Medical Diseases Simulating Acute Abdomen. H. Smith, Greenville.—p. 268.
Common Infections of the Hand: Etiology and Treatment. W. H. Prioleau, Charleston.—p. 276.
Pathologic Changes in Thyroid Gland: General Consideration. W. L. A. Wellbrock, Rochester, Minn.—p. 279.

Southern Medical Journal, Birmingham, Ala.

25: 1109-1196 (Nov.) 1932

*Rickets: New Treatment: Preliminary Report. C. J. Bloom, New Orleans.—p. 1109.
Disseminated Sclerosis. J. A. Shield, Richmond, Va.—p. 1116.
Circulation in Pregnancy. S. R. Roberts, Atlanta, Ga.—p. 1122.
Hyperphoria in Refraction. H. C. Smith, Nashville, Tenn.—p. 1129.
Postmortem Examinations in Private Practice, with Particular Reference to Diagnosis and Treatment of Heart Disease. E. A. Bancker, Jr., Atlanta, Ga.—p. 1133.
*Tumors of Testis. H. K. Wade, Hot Springs National Park, Ark.—p. 1138.
Luminal Dermatitis with Case Reports. A. H. Lancaster, Knoxville, Tenn.—p. 1142.
Toxic Reactions Produced by Derivatives of Barbituric Acid. M. S. Dougherty, Jr., Atlanta, Ga.—p. 1145.

Rickets.—Bloom's new treatment of rickets consists in the substitution of secondary calcium phosphate for cod liver oil or vitamin D in the daily ration of a child's diet. His observations cover a period of two and one-half years, resulting in positive observations. He obtained the best results when he added this salt, in the order named, to (1) a mixture of Lion brand unsweetened milk and a stock solution containing karo syrup and lactic acid; (2) condensed milk formulas; (3) dried milk mixtures, and (4) dilutions of cow's milk. Secondary calcium phosphate did not produce vomiting or result in constipation. The simple advice to shake the formula at various intervals during the feeding period was all the instruction necessary for the administration of this added ingredient. The author reports the results obtained in ten patients and believes that their accomplishment is due to the following reasons: 1. The calcium and phosphorus content of cow's milk is not available for complete metabolism, owing, perhaps, to the large amount of both these elements that are encased in the curd. 2. It is more than likely that the p_H of the gastric content plays a part in rickets and that an increase in the acidity may facilitate the absorption of the calcium and phosphorus. 3. The vehicle, namely, the type of milk, must play a part in the utilization of dicalcium phosphate, judging from the results obtained in mixtures 1 and 2. 4. The addition of secondary calcium phosphate may supply an excess of both calcium and phosphorus and thereby replace the amount of calcium and phosphorus contained in the curd, which, apparently, is not available.

Tumors of Testis.—According to Wade, metastasis in most patients with tumor of the testis has taken place before the patient consults his physician. In a large number it occurs before there is any clinical evidence of it. A malignant condition of the testis metastasizes early by the blood vessels and lymphatics. The prognosis is always extremely grave. So far the treatment that seems to offer the best result is high voltage roentgen therapy before and subsequent to castration. The consensus of opinion seems to be that high voltage roentgen therapy and radium therapy should be used from three to six weeks preceding castration. Coley's serum is used by some, and certainly from his report one feels that it has a real value. Simple castration has a mortality rate that is virtually nil. In the radical procedure the mortality rate varies from 10 to 20 per cent. All physicians should carefully examine the scrotum and its contents in every routine physical examination. If the prognosis is ever to be improved in malignant disease of the testis, it must be through an earlier discovery of this process.

Texas State Journal of Medicine, Fort Worth

28: 443-508 (Nov.) 1932

Intrinsic Cancer of Larynx. J. H. Foster, Houston.—p. 449.
Modern Trends and Treatment of Syphilis. P. R. Stalnaker, Houston.—p. 453.
Medical Treatment of Congenital Pyloric Stenosis. H. L. Moore, Dallas.—p. 459.
Case of Congenital Telangiectasis of Lung, Complicated by Brain Abscess. B. Reading, Galveston.—p. 462.
Primary Adenocarcinoma of Pancreas in Four Year Old Child: Report of Case. B. F. Stout and D. A. Todd, San Antonio.—p. 464.
Vincent's Disease Following Bite of Hand. F. Colby and H. B. Barr, Beaumont.—p. 467.
Microscopic Readings as Aid to Malaria Diagnosis. C. P. Coogle, Longview.—p. 470.
Diverticula of Small Intestine. J. W. Duckett, Dallas.—p. 473.
Acute Purulent Arthritis of Hip. J. B. Foster, Houston.—p. 476.
Modern Treatment of Varicose Veins. C. B. Sacher, Dallas.—p. 479.
Hysterectomy During Pregnancy. C. H. Harris, Fort Worth.—p. 480.
Advantages of Hospital Obstetrics over Obstetrics in the Home. J. M. Horn, Brownwood.—p. 484.
Need for Proper Education of Layman as Public Health Measure. G. L. Carlisle, Dallas.—p. 488.

Virginia Medical Monthly, Richmond

59: 447-508 (Nov.) 1932

Recent Developments in Field of Endocrinology of Interest to General Practitioner. T. P. Sprunt, Baltimore.—p. 447.
*Bacteriology and Treatment of Rheumatoid Arthritis. O. O. Ashworth, Richmond.—p. 452.
*Hemarthrosis. M. A. Johnson, Roanoke.—p. 457.
*Clinical Experience with Follicular and Anterior Pituitary Sex Hormones: Results of Treatment in One Hundred and Twenty Patients. E. C. Hamblen, Durham, N. C.—p. 464.
Posture in Relation to Medicine. R. L. Anderson, Richmond.—p. 474.
Diseases of Upper Respiratory Tract in Children. J. M. Moser, Chevy Chase, D. C.—p. 477.
What May be Expected from Adequate Institutional Care and Treatment of Psychotic Children. H. C. Henry, Petersburg.—p. 480.
Mental Hygiene Problem of Superior Child. B. R. Tucker, Richmond.—p. 483.
Food and Food Habits of the Preschool Child. J. M. Bishop, Roanoke.—p. 484.
Phenobarbital and Belladonna in Treatment of Hyperemesis Gravidarum. H. F. Kane, Washington, D. C.—p. 486.
Endocrinology. C. H. Maxwell, Morgantown, W. Va.—p. 488.
Atypical Case of Typhoid Fever. A. H. Moore, Doylestown, Pa.—p. 491.

Rheumatoid Arthritis.—Ashworth found that, in a study of 138 cases of typical rheumatoid arthritis, blood cultures yielded streptococci in thirty-nine, or 28.2 per cent, of the series. In thirteen other cases, or 9.4 per cent, a gram-positive diplococcus was recovered from the blood stream. Many of the streptococci recovered from the blood of arthritic patients were considered diphtheroid bacilli at the time when they were first isolated. Later, when cultivated under certain conditions, they took on the form of streptococci. In sixty-five cases of clinically typical rheumatoid arthritis, specific streptococcic agglutinins were demonstrated in the serum of forty-eight patients, or 89.2 per cent of the series. Whenever possible, autogenous streptococcus vaccine was prepared and administered to the arthritic patient over a period of several months. Many patients showed striking improvement under this treatment. There was considerable evidence to support the theory that rheumatoid arthritis is a streptococcic infection and that streptococcus vaccine has an important place in the modern therapy of this disease.

Hemarthrosis.—Johnson states that up to twenty months ago the treatment for hemarthrosis at the Lewis-Gale Hospital was aspiration of the knee joint, withdrawal of all the fluid possible by means of a number 16 Luer needle, and local anesthesia with a 2 per cent solution of procaine hydrochloride, and then the application of an ace bandage. This withdrawal of fluid sometimes had to be repeated six or eight times, the period of disability extending from two or three weeks to three or four months. Usually there was no permanent disability. Since then the treatment employed in his hospital in the thirty-

two cases treated, which he reports, has been the withdrawal of fluid under local anesthesia with a number 16 Luer needle; injecting as much air into the knee joint as the amount of fluid withdrawn, if not more, and then applying an ace bandage. In this series of cases the temporary disability has been reduced to an average of twelve days in the cases in which the diagnosis is simple hemarthrosis. Permanent disability has not occurred in any of the patients. The point of aspiration is varied. Pressure is made above the patella on the lower part of the femur or thigh anteriorly, and the point of aspiration is about one-half inch to the right or left of the lower end of the patella, depending on the point of greatest bulging. Using local anesthesia, the needle is carried straight through the joint capsule. If a 2 per cent solution of procaine hydrochloride is injected in a straight line, it will be painful, but if the anesthetic solution is carried about one-half inch to each side of the line where the needle is to be inserted, there will be no pain. Care is taken to express all fluid possible. This is done slowly and painstakingly. A 30 cc. syringe is used to inject an amount of air equal to the amount of fluid withdrawn. The policy he adopted later was to inject air until the knee joint felt tight. The ace bandage is used to make as much pressure over the knee joint, for three or four inches below and above, as can be tolerated without interfering with the circulation of the blood. The patients are relieved immediately from pain and, even though the knee is tighter following injection of air, they are able to carry the knee through normal motions without pain.

Follicular and Anterior Pituitary Sex Hormones.—The results of treating 120 patients with the follicular (theelin) and anterior pituitary luteinizing hormones (Antuitrin-S) are analyzed by Hamblen. He used intramuscular administration except in a few instances in which the follicular hormone was given by vaginal suppositories. Thyroid extract was used in addition in five patients; the results in these patients are not attributed to the follicular or luteinizing hormones. The follicular hormone was used in the treatment of twenty-three patients with natural or artificial menopause. Bleeding recurred in only one instance. Relief of subjective symptoms was excellent in nineteen patients. A total of twenty-six patients with primary and secondary amenorrhea were treated. Uterine bleeding followed treatment in eighteen patients; of these, however, only eight experienced continued rhythmic uterine bleeding, interpreted as being normal menstruation. Two of these patients had received thyroid extract. Of the forty-six patients with oligomenorrhea and hypomenorrhea, thirty-two obtained excellent regulation of menstruation; fourteen experienced no effect. Relief of associated symptoms and regulation of the menstrual irregularity were definitely related in the author's experience. The effect of these hormones on special symptoms associated with oligomenorrhea and hypomenorrhea is interesting. Three patients who complained of frigidity received no relief. Of thirteen patients who complained of dysmenorrhea, eleven received relief. Of seven patients who complained of menstrual headaches, six received relief. The author's experience with eighteen patients with hypermenorrhea does not warrant any worth-while inferences being made. The follicular hormone has not proved of value. The luteinizing hormone has yielded satisfactory results in some instances. Reactions to the follicular hormone have not been severe. The luteinizing hormone has caused more severe local reactions and in one instance moderate general reaction. Aggravation of epilepsy in two patients and of hysteria in two others has occurred. The author concludes that there should be a close correlation between clinical, surgical and histopathologic studies of the effects of these hormones. Particular attention should be paid to the ovarian responses to these hormones and to studies of the endometrium and menstrual blood following their administration.

West Virginia Medical Journal, Charleston

28: 533-584 (Dec.) 1932

Indications for Cesarean Section. W. D. Porter, Cincinnati.—p. 533.
Fractures of the Pelvis. E. B. Henson, Charleston, and R. D. Lublin, Hartford, Conn.—p. 539.
Fatigue in School Children. J. T. Thornton, Wheeling.—p. 542.
The Pediatrician and the General Practitioner. R. C. Hood, Clarksburg. —p. 548.
Diphtheria Immunization. W. B. Hunter, Huntington.—p. 554.
Craniocerebral Injuries. W. V. Wilkerson, Montgomery.—p. 557.
Intestinal Obstruction. E. B. Wright, Clarksburg.—p. 564.
Social Insurance. E. H. Ochsner, Chicago.—p. 570.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 953-996 (Nov. 26) 1932

*Tissue Changes in Virus Diseases. J. C. G. Ledingham.—p. 953.
Pock Diseases. E. Paschen.—p. 957.
Maternity and Child Welfare Services in Their Relation to Public Health. Janet Campbell.—p. 960.
*Temporary Changes in Refraction of Eye in Diabetics. R. A. Greeves. —p. 963.
*Excretory Bacilluria in Relation to Diagnosis of Renal Tuberculosis. J. Menton.—p. 965.

Tissue Changes in Virus Diseases.—Ledingham points out that the types of tissue change encountered in virus infections do not differ in essence from those encountered in infections due to the visible bacteria. Where they seem to differ, as in those virus infections associated with characteristic cell inclusions, whether intracytoplasmic or intramuscular, the difference is probably not really of a fundamental nature or one bearing the implication that viruses are essentially intracellular parasites. It is more probable that the penetration of epithelial cells, which is known to take place in fowl pox, ectromelia and vaccinia, is an accidental occurrence in the course of massive proliferation of the virus or of elementary bodies in their neighborhood, and to which the invaded cell cytoplasm or cell nucleus reacts to its own or the parasite's advantage or to the advantage of both. In any case a temporary symbiosis would appear to be established. It would be difficult to differentiate a process such as this from that occurring in leprosy and kala-azar, the parasites of which can establish themselves inside macrophages of the reticulo-endothelial system, or from that occurring in tularemia, in which the minute organisms of the disease invade the parenchymatous cells of the liver. The only difference between the two sets of phenomena is that in the former elaborate histologic and microchemical technics have usually failed to unravel the complex of invading parasite and cell constituents, owing to the smallness of the invading parasite, while in the latter demonstration of the invader is, as a rule, relatively easy.

Refraction Changes in Diabetes.—According to Greeves, transient myopic and hypermetropic changes in the refraction of the eyes occur in association with certain metabolic disturbances. A remarkable relation seems to exist between those refractive changes and the blood sugar concentration. The author reports two cases of transient myopia associated with diabetes, with an apparent relation between the degree of refractive error and the amount of sugar in the blood. It is true that diabetic patients not infrequently become myopic as the result of changes in the refractive indexes of lenses that are becoming cataractous—the association of myopia with cataract is, of course, well known—but this variety of myopia is progressive and would hardly be susceptible to treatment; besides which, in neither of the author's patients was there a trace of lens opacity. The local cause of these variations in refraction is most probably a variability in the refractive index of the lens. The underlying complex biochemical causes are still obscure.

Excretory Bacilluria and Renal Tuberculosis.—Menton selected seventy-six patients who had advanced pulmonary tuberculosis but who did not have any obvious signs or symptoms of genito-urinary involvement. Their urines were tested biologically. All the specimens were negative except one. Tubercle bacilli were repeatedly present in the urine of this exception and were of the human type. The presence of the micro-organism was for a time the only abnormality, but other signs developed gradually in this urine, which suggested early renal tuberculosis. No definite evidence of excretory bacilluria was found in this series of cases.

International Journal of Psycho-Analysis, London

13: 405-504 (Oct.) 1932

The Acquisition of Power over Fire. S. Freud.—p. 405.
Note on Freud's Hypothesis Regarding the Taming of Fire. E. H. Erlen-Meyer.—p. 411.
Jealousy as Mechanism of Defense. Joan Riviere.—p. 414.
Introjection and Projection in Mechanism of Depression. J. Hárnik. —p. 425.
Some Problems of Integration in Women. Marjorie Brierley.—p. 433.
Regression and Projection in the Super-Ego. E. Weiss.—p. 449.

Journal of Physiology, London

76: 395-494 (Nov. 18) 1932

*Behavior of Liver Glycogen in Experimental Animals: IV. Effect of Some Anesthetics. G. E. Murphy and F. G. Young.—p. 395.
Id.: V. Some Factors Affecting Liver Glycogen Recovery in Decapitate Cat. C. L. Evans, G. E. Murphy and F. G. Young.—p. 413.
*Effect of Some Accidental Lesions on Size of Spleen. J. Barcroft.—p. 436.
Alterations in Size of Denervated Spleen Related to Pregnancy. J. Barcroft.—p. 443.
Volume of Blood in Uterus During Pregnancy. J. Barcroft and P. Rothschild.—p. 447.
Observations on Proximal Portion of Exteriorized Colon. J. Barcroft and F. R. Steggerda.—p. 460.
Optimum Temperature for Investigations on Frog's Circulation. E. M. Scarborough.—p. 472.
*Rôle of Lactic Acid in Nerve Activity. T. P. Feng.—p. 477.

Anesthetics and Liver Glycogen.—Murphy and Young investigated the effect of anesthesia by chloroform, amytal, phenobarbital, dial, numal and chloralose on blood sugar and liver glycogen of the cat. In all the experiments in which liver samples were removed at intervals for analysis, it was found that the liver glycogen content fell throughout, or at some time. Of the anesthetics tried, on the average there was least fall of glycogen with amytal, while chloralose had least effect on the blood sugar. In experiments in which the animal was anesthetized some hours before the first liver sample was taken, the liver glycogen curve showed a plateau for the duration of which the fall of liver glycogen was small. This can be considered to be evidence of the formation of glycogen in the liver, from noncarbohydrate sources.

Accidental Lesions and Size of the Spleen.—Barcroft reports that necroses of the skin, caused either by friction or by unduly high temperature, are accompanied by a contraction of the spleen. The contraction may come on before the skin is broken and therefore before bacterial action from without has occurred. The contraction may pass off before the necrosed area has "dried up" if it is suitably dressed. The effects described may be observed in denervated as well as innervated spleens.

Lactic Acid and Nerve Activity.—Feng describes experiments in which he demonstrated that the frog's nerve is definitely poisoned by soaking in from 0.37 to 0.4 per cent solution of iodoacetic acid for two hours or longer. The poisonous effect shows itself in the inability of such nerve to endure prolonged activity in oxygen. Such nerve is also much more readily asphyxiated in nitrogen than normal. Giving sodium lactate to poisoned nerve improves its capacity for prolonged activity in air or in oxygen; in nitrogen the time to complete asphyxiation, with or without continuous stimulation, does not seem to be lengthened by the presence of lactate, except occasionally and slightly. On readmission of oxygen, the superiority of the poisoned nerve containing lactate again manifests itself in its quicker and greater recovery. These results indicate that the frog's nerve is capable of utilizing lactic acid by oxidation and that the formation of lactic acid, though not essential to nerve conduction, enables the normal nerve to perform long hours of continuous function.

Journal of State Medicine, London

40: 621-682 (Nov.) 1932

Comparison of Properties of Certain Tissue Extracts Having Depressor Effects. R. H. Major, J. B. Nanninga and C. J. Weber.—p. 487.
The Lure of Vital Statistics. T. H. C. Stevenson.—p. 621.
The Sanitary Evolution of Belfast. J. D. Williamson.—p. 628.
Brucella Abortus Infection in Ireland. J. W. Bigger.—p. 642.
Abortus Fever in Northern Ireland. J. S. Baxter.—p. 648.
Some Observations on Brucella Abortus Infection in Northern Ireland. G. F. W. Tinsdale.—p. 653.
Infection with Brucella Abortus in the Irish Free State. W. P. O'Callaghan.—p. 659.
Infectious Abortion in Cattle. H. G. Lamont.—p. 667.
*Occurrence, Distribution and Specificity of Agglutinins for Brucella Abortus in Human Serums. J. D. A. Gray.—p. 673.

Specificity of Agglutinins for Brucella Abortus.—According to Gray, the agglutinating effects of apparently normal serums for brucellar suspensions bear no obvious relationship to the results of the Wassermann test or the previous administration of a TAB vaccine. An unusually large percentage of the women with serums possessing such agglutinating effects gave histories of previous abortions. A high ratio of the titer of the carbonic acid soluble fraction of the serum to that of the insoluble fraction is characteristic of the serums of infected human beings and recently immunized rabbits, but it rapidly falls with the lapse of time. After a study of serums selected for their high titers from Wassermann serums, the author makes the suggestion that this high ratio (ten or over) may be of value in identifying present or recent infections in which the titer of the whole serum remains persistently low. The titer of an individual serum for brucellar suspensions may rise rapidly during an attack of gonorrhea, but serums giving negative results at the onset of the attack were found to remain negative throughout.

Lancet, London

2: 983-1038 (Nov. 5) 1932

*Upper Urinary Tract in Pregnancy. D. Baird.—p. 983.
High Carbohydrate Diet in Treatment of Diabetes Mellitus. G. Graham, A. Clark and H. E. W. Robertson.—p. 990.
*Sympathetic Control of Tissue Change and Its Surgical Significance. R. C. Shaw.—p. 993.
Actuation of Inert Diaphragm by Gravity Method. F. C. Eve.—p. 995.
Fatal Poliomyelitis in Adults: Case Reports. H. G. Garland and F. F. Hellier.—p. 997.

Upper Urinary Tract in Pregnancy.—From an investigation of the various complications in 1,000 consecutive cases admitted to the Glasgow Royal Maternity Hospital, Baird concludes that pregnant women show varying degrees of atony of the upper urinary tract. In some this is slight, so that no appreciable stasis is produced. In others it is marked and can be shown to occur at the beginning of pregnancy. In the second half of pregnancy, dilatation and stasis frequently result and are due to pressure of the uterus on the atonic ureters at the pelvic brim. Dilatation and stasis from the pelvic brim upward can be produced in the nonpregnant by ovarian cysts. In these the dilatation is less and there is an absence of the marked elongation and kinking of the ureter that is characteristic of pregnancy, even though the pressure exerted by the cyst may be greater than could possibly be exerted by the pregnant uterus. The atony peculiar to pregnancy is therefore the primary factor. In normal pregnancy the tone of the ureters has been shown to improve near term, and in cases of albuminuric toxemia there is a minimum of atony and stasis. In both instances, the author believes, there is an excess of posterior pituitary hormone in the blood. The primary factor in the production of the changes in the upper urinary tract in pregnancy is probably, therefore, a disturbance of the endocrines. Infection of the urinary tract is common during pregnancy and is often unrecognized. Infection is always preceded by stasis and seldom clears up completely until the stasis is relieved by termination of the pregnancy. Early diagnosis is most important, as, if instituted early, simple treatment by abundant fluids and alkalis is sufficient to enable the patient to go to term. Ureteral catheterization has a definite place in the treatment of serious cases for the relief of pain and the promotion of drainage.

Sympathetic Control of Tissue Change.—According to Shaw's observations, the sympathetic nerve control of the tissue cells is normally of the nature of a brake, preventing irregular and uneconomic proliferation. In this respect its activity may be compared to its inhibitory influence on the sensory threshold and the production of the brake phenomenon in muscle tissue. Certain nonspecific irritants act on the autonomic nerve mechanism, associated with the dermis and epidermis, and produce a definite sequence of pathologic changes characterized primarily by hyperplasia of fibrous elastic and epithelial tissue cells. The author suggests that the derangement of the sympathetic hormonic apparatus determines the initial development of neoplasms. The surgical removal of the sympathetic nerve supply acts essentially through extirpation of those factors that disturb the physiochemical balance of the tissue cells, and the passive effects of vasodilatation are of a secondary importance.

Medical Journal of Australia, Sydney

2: 647-676 (Nov. 26) 1932

The Delinquent Child. J. W. K. Bruce.—p. 647.
Environment and Hysteria. J. A. McGeorge.—p. 655.
Fracture of Clavicle. H. R. Scrivener.—p. 660.

South African Medical Journal, Cape Town

6: 715-754 (Nov. 26) 1932

Medical Evidence. H. de Villiers.—p. 717.
Prevalence of Certain Diseases Among Natives of Ciskei. N. MacVicar.—p. 721.
Chronic Goiter. I. Frack.—p. 724.

Gazette Hebdomadaire des Sciences Méd. de Bordeaux

53: 801-816 (Dec. 18) 1932

Syndrome of Exophthalmic Goiter After Thyroid Treatment. G. Jeanneney. —p. 807.
*Unilateral Exophthalmos on Same Side as Unilateral Goiter: Two Cases. G. Jeanneney.—p. 808.
Contraction of Abdominal Wall in Course of Trauma of Dorsolumbar Spine. Bégouin and Magendie.—p. 809.

Unilateral Exophthalmos and Unilateral Goiter.—Jeanneney reports two cases of rapidly appearing goiter with unilateral predominance accompanied by an exophthalmos on the side of the thyroid hypertrophy. He thinks that the intraglandular stimulation of the sympathetic, more marked on the side of the goiter, gave rise in these cases to a unilateral exophthalmos. Cases of unilateral exophthalmos are not exceptional. Worms and Hamant opine that the appearance of a unilateral exophthalmos on the same side as a unilateral goiter is a coincidence, whereas Kocher, Muller and others think that this is the general rule. The author agrees that there is a great deal of truth in the latter hypothesis; following a hemithyroidectomy he has observed a unilateral regression of the exophthalmos on the same side. He thinks it will be interesting to see whether in the two cases reported unilateral intervention will dispel the unilateral exophthalmos.

Paris Médical

2: 497-512 (Dec. 10) 1932

*Hemophilic Arthropathies. A. Le Marc'hadour and A. Breton.—p. 497.
*Blood Transfusion in Course of Grave Typhoid. J. Bourgeois and A. Maisler.—p. 504.
Paroxysmal Tachydardia: Case. J. Albert-Weil and L. Misermont.—p. 509.
Sprain of Internal Lateral Ligament of Instep. A. Schwartz.—p. 511.

Hemophilic Arthropathies.—In connection with the report of three brothers with hemophilic arthropathy, Le Marc'hadour and Breton say that hemophilic arthropathies usually occur in children. They affect chiefly the large joints of the extremities and, above all, the knee. The arthropathy starts with a simple hemarthrosis occurring suddenly without apparent cause. The joint becomes swollen and painful, the skin is white and there is functional impotence. The acute symptoms pass in a few days; after eight days there is only some muscular atrophy and anesthesia of the nerves. As a rule these hemarthroses repeat themselves, gradually producing organic lesions of the synovial membrane, ligaments, bony surfaces and articular epiphyses and resulting in chronic arthritis. At this stage the aspect is that of a tuberculous process, there is no pain at pressure on the bony surfaces and no adenopathy of the groin. With little subacute attacks, characterized by increase in volume and functional impotence, the arthropathy evolves toward fibrous ankylosis. If the hemarthrosis is the first symptom of hemophilia, the diagnosis is often incorrect. Articular puncture is to be avoided because it is dangerous but examination of the blood and roentgenography facilitate the diagnosis. Roentgenographically the evolution of the hemophilic arthropathy appears as a general homogeneous decalcification with punctated zones of rarefaction near the epiphyseal extremities, and linear densification of the osseous shell gradually shading into the interior of the bone. There is marked uniform articular constriction but the line of separation never disappears entirely. The articular segments are modified; there may be periarticular osteophytic production and subluxation. Fractures are easily produced as a result of the decalcification. In one of the cases reported there was a metaphyseal fracture. General treatment of the hemophilia in the form of serum therapy should be combined with local treatment of the arthropathy, consisting in absolute and prolonged rest. If deformity has already occurred, correction may be undertaken, but only with the greatest precautions because of the tendency to hemorrhage.

Blood Transfusion in Severe Typhoid.—Bourgeois and Maisler think that the value of blood transfusions in severe cases of typhoid depends not solely on the quantity of blood injected but also on the antitoxic properties of the transfused blood. In cases in which profuse hemorrhages occur, the restitution of blood by massive injection is of paramount importance, but in cases of ataxo-adynamic typhoid in which the intervention is undertaken because of toxic symptoms, delirium, cyanosis, dyspnea and so on, it is the transfer of antitoxin that is of chief importance. The sudden disappearance of toxic symptoms, which has been observed following blood transfusions in ataxo-adynamic typhoid, indicates that a specific immunity is conferred; but the fact that the disease continues to evolve under an attenuated form and that recurrences are observed indicates that the immunity is antiendotoxic rather than antimicrobic. The author reports a case illustrating this mode of action of the transfusion. Experimentation has shown that typhoid endotoxin can be neutralized by human serum, but the serum of convalescent persons has a much higher antiendotoxic value than that of normal or of vaccinated persons. To give the typhoid patient the best chances for recovery, one should select the donor whose plasma has the highest antiendotoxic power. As the antitoxic power of convalescent serum varies considerably, the authors think that when precise laboratory data cannot be obtained it is best to utilize the blood of a donor who has recovered from an attack of typhoid of average intensity and sufficient prolongation to have acquired a substantial immunity, and of sufficiently recent date to have preserved the immune properties of his serum.

Schweizerische medizinische Wochenschrift, Basel

62: 1149-1172 (Dec. 10) 1932

*Treatment of Acute and Chronic Suppuration of Middle Ear. E. Schlittler. —p. 1149.
*Trauma and Orchiepididymitis. M. Ganzoni.—p. 1152.
*Experimental Investigations on Modification of Blood Regeneration by Female Sex Hormone. P. F. Nigst.—p. 1156.
Digital Tendovaginitis. M. Iselin.—p. 1159.
Periphlebitis. Stotzer.—p. 1163.

Treatment of Suppuration of Middle Ear.—Schlittler's report is based on the material of the Basel clinic during the six years from 1925 to 1930. In regard to the conservative treatment, he says that he employs boric acid irrigations and the ice bag. Paracentesis, which he considers also as a conservative measure, he thinks advisable in those cases in which, in spite of great pressure in the tympanic cavity (protruding tympanic membrane, severe pains), there is no spontaneous perforation. In discussing operative treatment, he first gives his attention to the chronic suppuration of the middle ear. He differentiates the chronic cases into two groups, the simple tympanic suppurations and the epitympanic suppurations that are usually complicated by cholesteatoma. He thinks an operative intervention necessary, as a rule, only if cholesteatoma is present, because endocranial complications are rare in the chronic tympanic suppurations. Operation is advisable if conservative treatment by means of the eustachian catheter is not successful within four or six weeks, or if the suppuration relapses again and again, or if there are signs of an endocranial complication or the facial nerve has become paralyzed. The determination of the advisability of a surgical intervention is much more difficult in acute otitis than in chronic cases. The author states that 353, that is, 15.2 per cent, of 2,319 patients with acute otitis were operated on, whereas the other 84.8 per cent recovered with the aid of conservative treatment. Other statistical reports show a similar or even a smaller percentage of operative interventions. However, the author emphasizes that this low percentage should not lead to an undue postponement of an operative intervention, but that operative treatment should be resorted to as soon as there are signs of an endocranial complication. He thinks that mastoiditis as such does not necessitate an operation but that disintegration of the bone or bone abscess does. A tabular report indicates that, compared with older statistics, there was a considerable increase in the complications of acute otitis during recent years, whereas the percentage of complications in chronic cases remained about the same. Other tabular reports show the incidence of epidural abscess, a most frequent but not dangerous complication, the great increase in meningitis with fatal outcome after acute otitis, and the incidence and mortality of sinus phlebitis and of cerebral abscess. The author thinks that the considerable increase of acute otitis and particularly of its endocranial complications (epidural abscess and meningitis) may be due to the influenza epidemics of recent years.

Trauma and Orchiepididymitis.—Ganzoni considers the relation between trauma and orchiepididymitis primarily from the point of view of medical jurisprudence with regard to the right to compensation. He discusses the direct injury of the testis and of the epididymis, the indirect injury that is produced by torsion of the spermatic cord, and the various forms

of orchiepididymitis. Orchitis is usually the primary condition in metastatic hematogenic inflammations, while epididymitis develops through contact. Hematogenic orchitis develops frequently in epidemic parotitis, but in other infectious diseases it is comparatively rare and it usually ends in recovery. Inflammations of the testes or of the epididymis may also originate in the urethra and may be caused by gonorrhea or by simple urethritis. The discussion of the pathogenesis and the diagnosis of urethral epididymitis is followed by an estimation of the relations of traumas to inflammatory condition of the testes and the epididymis. The author points out that a concurrence of trauma with previous inflammations is possible and that the recognition of a direct trauma would not be difficult in such cases but may be perplexing in case of a combination of indirect trauma (torsion of spermatic cord) with acute epididymitis. The concurrence of trauma with orchiepididymitis of hematogenic origin is probably rare. Of greatest interest from the forensic point of view is the relation of trauma to epididymitis in existing urethritis, because epididymitis of urethral origin is quite frequent and is diagnosed as traumatic orchitis in many instances. The author states that he rendered expert testimony in twenty-four cases of this nature, he gives the detailed report of one case as an illustration, and he states the rules that should be followed in the estimation of the traumatic origin of orchiepididymitis.

Modification of Blood Regeneration by Female Sex Hormone.—Nigst reports observations on normal and on castrated female animals in which anemia had been produced by bleeding. In order to determine whether the female sex hormone accelerates the blood regeneration, some of the animals were given female sex hormone, while others served as controls. The experiments proved that under the influence of the sex hormone the blood regeneration is accomplished completely in a short period in the normal as well as in the castrated animals, and in the majority of cases the hemoglobin content even shows a hypercompensation. There was generally no compensation in the normal and castrated animals that had not been treated with sex hormone, the hemoglobin content became normal after a long period in one castrated animal, and there was hypercompensation in one of the normal animals. Especially noteworthy is the fact that in the anemic noncastrated animals that received no sex hormone the regeneration was slower than in the castrated animals that received sex hormone. Thus it appears that the administered sex hormone has a more intense hormonal action on the incretory system than do the normal ovaries. The author thinks that his experiments prove that the bone marrow is influenced by the female sex hormone, and he recommends the therapeutic use of the sex hormone for the purpose of blood regeneration in women, particularly after great loss of blood in operations or in childbirth.

Policlinico, Rome

39: 621-684 (Dec. 1) 1932. Medical Section

*Physical Therapy of Neuralgia of Brachial Plexus. P. Farneti.—p. 621.
Experimental Research on Hematic Modifications Caused by Roentgen Rays in Normal and Splenectomized Animals. V. Serra.—p. 640.
Phrenic-Exeresis. P. M. Marabotti and F. Winspeare.—p. 664.

Physical Therapy of Neuralgia of Brachial Plexus.—Farneti reports his experiments with infra-red and ultraviolet rays, light baths and diathermy in forty-two patients. He obtained better therapeutic results with erythema doses of ultraviolet rays in essential or idiopathic neuralgia of the brachial plexus due to deforming osteo-arthropathy of the cervical segment of the spine. The author has introduced a modification in the technic of diathermy of the cervical column and the brachial plexus: The patient reclines on a physical therapy table with raised back. A rectangular electrode measuring about 8 or 12 cm. is placed on the cervical segment of the vertebral column with its longer side in a transverse direction, adapted to the form and dimensions of the nuchal region and held in place by a sand bag. Instead of the sand bag a fairly long elastic bandage may be used which encircles the neck, passes under the axilla and is knotted at the back. This nuchal electrode, which constitutes the active electrode, is connected with a pole of the apparatus. Two other rectangular electrodes, from 9 to 18 cm. in size, are applied to the middle third of each arm and are connected to the other pole of the apparatus; these, which are larger than the nuchal electrode, constitute the negative electrode. In this way two currents run from the middle of the arms and converge on the cervical segment, where the active electrode is placed and where in cases of arthritic alterations of the cervical segment the greatest quantity of diathermic heat is desired. This method is also applicable to unilateral neuralgia in which, by applying an electrode to the healthy arm, a more unified diffusion of diathermic current is obtained on the cervical portion. The author states in conclusion that: 1. The diathermic currents and ultraviolet rays possess a more efficacious therapeutic action in comparison with light rays, infra-red rays and light baths. 2. The best therapeutic action was obtained by treating the essential neuralgic forms of osteo-arthrosis of the cervical segment of the vertebral column with diathermy carried directly to the cervical vertebra. 3. Regarding the mechanism of action of ultraviolet rays in the treatment of neuralgia of the brachial plexus, the best theory is that of a reflex stimulation which modifies the circulation in the nutrient vessels of the nerve assisted by a general action of humoral nature.

Dermatologische Wochenschrift, Leipzig

95: 1785-1812 (Dec. 10) 1932

*Treatment of Gonorrhea in Women. F. Falkenstein.—p. 1785.
Complement Fixation Reaction and Flocculation Reaction in Gonorrhea. F. Marquardt.—p. 1797.

Treatment of Gonorrhea in Women.—Falkenstein points out that, in gonorrhea of the cervix uteri, some authors advise active treatment, while others assert that ascending processes are much less frequent without active treatment. He explains the skepticism in regard to active treatment as due to the fact that the gonococcides employed heretofore, such as the solutions of silver nitrate did not give satisfactory results. Then dyestuffs of the acridine group were tried, particularly solutions of acriflavine hydrochloride. In order to find a preparation combining low concentration with high gonococcidal action, the acriflavine solutions were combined with other substances such as silver, but the best results were obtained with an acridine derivate that contains arsenic in organic combination. This preparation can be employed either in the form of solution or, for urethral treatment, in the form of crayons. The author gives a detailed description of the technic of the treatment. The preparation was found to have also prophylactic value and it seems that the quick disappearance of infectiousness produced by this preparation prevents ascending processes.

Jahrbuch für Kinderheilkunde, Berlin

137: 125-256 (Nov.) 1932

Pleural Empyema During Childhood. H. Zischinsky.—p. 125.
*Tachycardia During Childhood and Its Modification by Administration of Sugar. E. Schädrich and G. W. Parade.—p. 141.
Cerebrospinal Meningitis During Early Childhood. W. G. Balaban and R. N. Kritschewska.—p. 152.
Estimation of Relative Size of Heart. O. Kirsch.—p. 185.
Demonstration of Herpes or Vaccine Virus by Means of Inoculation of Cornea of Rabbits. H. Gasteiger and V. Niederwieser.—p. 212.

Tachycardia During Childhood.—On the basis of reports in the literature, Schädrich and Parade maintain that paroxysmal tachycardia during childhood may be caused by various factors, congenital or acquired. They give an interesting clinical history of a boy, aged 10, in whom cardiac disturbances were linked with disorders of the carbohydrate metabolism. Severe tachycardia concurred with hypoglycemia, and bradycardia concurred with hyperglycemia. Attempts were accordingly made to counteract the attacks of tachycardia by means of the intravenous administration of dextrose, and the results obtained by this treatment exceeded all expectations. In accordance with experiences during hypoglycemia in diabetic patients, the intravenous administration of sugar was then replaced by oral administration and, when the first signs of an attack of tachycardia were watched for and the sugar was given early enough, it was always possible to check an attack. The authors also point out that the boy was very sensitive and that a nervous component played an important factor in the development of the attacks of tachycardia. They describe the electrocardiographic aspects of the bradycardia and of the tachycardia and state that, if both the electrocardiographic and the clinical aspects are taken into consideration, the prognosis is uncertain, the more so since the roentgenogram reveals an enlargement of the left auricle; but they consider it advisable to counteract the circulatory disturbances by administration of sugar.